

Chemistry Pedagogy Links Teachers To Learners

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Dr. Avtar Singh Rahi

**Head and Associate Professor,
Department of Chemistry,
Government Post-Graduate College,
Ambala Cantt (Haryana)-India**

Abstract

The New Education Policy (1986) sought to involve teachers in defining and sharing effective teaching-learning practices. However, from a political perspective, educational progress across the curriculum was far too slow and uneven. Government framed and revised policy time to time to include teachers for various activities of national and curriculum importance. This forced a considerable reduction of flexibility and autonomy (and enjoyment) and a loss of available time and energy, because of much enhanced accountability and curriculum pressure. It was particularly significant since this inhibits teachers' engagement in research, development or even in reflective practices in their own classrooms. Scoring students' hundred percent result on the basis of mugging up the contents, can establish a teacher as qualified or effective or best? This paper is trying to provide a detailed specification of teachers' necessary science knowledge.

1. INTRODUCTION

Teachers differ from scientists, not necessarily in the quality or quantity of their subject matter knowledge, but in how that knowledge is organized and used. The focus of educational research is very heavily weighted towards conceptions of students, implicitly assuming that chemistry teachers know the right scientific answers for each and every problem. There is, of course no argument for careless reasoning or sloppy vocabulary, but surely it is part of any pattern of careful thinking that meanings and significance of words and ideas are constantly re-evaluated? What is unique about the teaching process is that it

requires teachers to transform their subject matter knowledge for the purpose of teaching. Pedagogical content knowledge is highly specific to the concepts being taught, is much more than just subject matter knowledge alone and develops over time as a result of teaching experience. This forced a considerable reduction of flexibility and autonomy (and enjoyment) and a loss of available time and energy, because of much enhanced accountability and curriculum pressure. It was particularly significant since this inhibits teachers' engagement in research, development or even in reflective practices in their own classrooms. These new governmental constraints have also spread to teacher education and training. Those responsible for the educational system seem to see science education as a repository of certainty and *getting it right* as the main prerequisite for science teachers. They also seem to see learning as a relatively unproblematic or mechanistic process that requires only clarity from the teacher and sufficient hard work on the part of the student, for the material presented to be learned. It is sufficient for a learner to qualify any examination but is it sufficient for a learner to understand what he or she is doing or learning? Scoring students' hundred percent result on the basis of mugging up the contents, can establish a teacher as qualified or effective or best? This paper is trying to provide a detailed specification of teachers' necessary science knowledge.

2. LITERATURE REVIEW

According to Driver and Easley (1978), Bodner (1986), Nakhleh (1992) and Garnett et al. (1995) that much has been written about constructivism in Chemistry and the ways in which learners make sense by constructing meanings and explanations for themselves. However, of greater concern is the relative lack of impact that most research into chemistry learning has had on the practice of chemistry education in schools and university classrooms and the very small numbers of practicing teachers who have an interest in educational research (de Jong 1999).

3. PEDAGOGICAL CONTENT KNOWLEDGE

Pedagogical content knowledge is a type of knowledge that is unique to teachers and is based on the manner in which teachers relate their pedagogical knowledge (how to teach) to their subject matter knowledge (what to teach). It is a form of knowledge that projects science teachers as teachers rather than scientists (Gudmundsdottir and Shulman 1987). Teachers differ from scientists, not necessarily in the quality or quantity of their subject matter knowledge, but in how that knowledge is organized and used. Cochran et al. (1993) revised Shulman's original model to a model that results from an integration of four major components; Subject matter knowledge, Pedagogical knowledge, Knowledge of students' abilities and learning strategies and Subject matter expert with mode and concepts clarity.

A topic of *Photosynthesis* can be taught differently by different Educators. *Physical chemist* will see more of physics in it. *Inorganic chemist* will stress on water and nutrients and *Organic chemist* will stress for energy and various forms of compounds formed. *Biologist* may stress more on physiology but may forget to tell about chemistry

behind that. *Physicist* may try to find physics laws behind that. Little or inappropriate knowledge, understanding and attitude lead to misconceptions. The topic photosynthesis may have different values for different experts but the learner needs one and comprehensive approach. Carpenter et al. (1988), Feiman-Nemser and Parker (1990) and Gess-Newsome and Lederman (1993) mention that novice or inexperienced teachers tend to make broad pedagogical decisions without assessing students' prior knowledge, ability levels, or learning strategies because they are not expert in content fields and base teaching decisions. Research is needed to find the appropriate methodology to make students understand the contents properly and accurately.

The focus of educational research is very heavily weighted towards conceptions of students, implicitly assuming that chemistry teachers know the right scientific answers for each and every problem. While teaching a lesson or writing a book, when such people demonstrate alternative conceptions, these *mistakes* are simply deprecated. It is not mentioned to highlight such people but it is argued here that we all carry with us facets of basic chemical knowledge that may not pass muster when subjected to critical examination by others. This is inevitable and however much one strives for absolute correctness at whatever level some uncertainty will remain. Even after going through very careful preparation for writing an article or presenting a teaching session there can be no absolute assurance that everything will be correct.

Uncertainty, ambiguity and fuzziness are inevitable and an integral part of the epistemology of chemistry. Certainly students need to accept that *sense making* is integral to the doing and learning of chemistry. This is why educators should try to use words carefully, define terms, state laws as clearly as possible and continually match and rematch these ideas with experience and the ideas of others. Science (chemistry) education is being pushed towards greater certainty, greater emphasis on test and examination scores, greater bureaucratic accountability and less flexibility, autonomy and professional satisfaction (and fun) for science teachers and their students - all in the name of higher standards. Perhaps there was too little certainty and consistency during earlier times but we now seem to be losing balance in the opposite direction. Some uncertainty legitimates, indeed requires questioning, contribution, debate, invention and ideas from teachers and students. Too much uncertainty or certainty will make science (chemistry) too complex, difficult to learn and impossible to teach. Wong (2001) considered an appropriate flavour of uncertainty for the health of science (chemistry) to be good.

It is very important to substantiate or clarify the students' misconceptions and pseudo-conceptions before starting teaching-learning process. Without aligning and catalyzing the scientific contents and pedagogical approach with current scientific views and knowledge, no curriculum or lesson can be re-fabricated or simplified or re-characterized. The new approach should be based on learners' views. A single or uniform pedagogy cannot serve the purpose for each and every type of content. Chemistry cannot be taught by the way of other sciences or commerce and humanities. A different approach specifically for chemistry only can justify the teaching-learning process. The

model mentioned in the figure for example, can be applied to “Concept of Chemical Bonding” an important topic in chemistry.

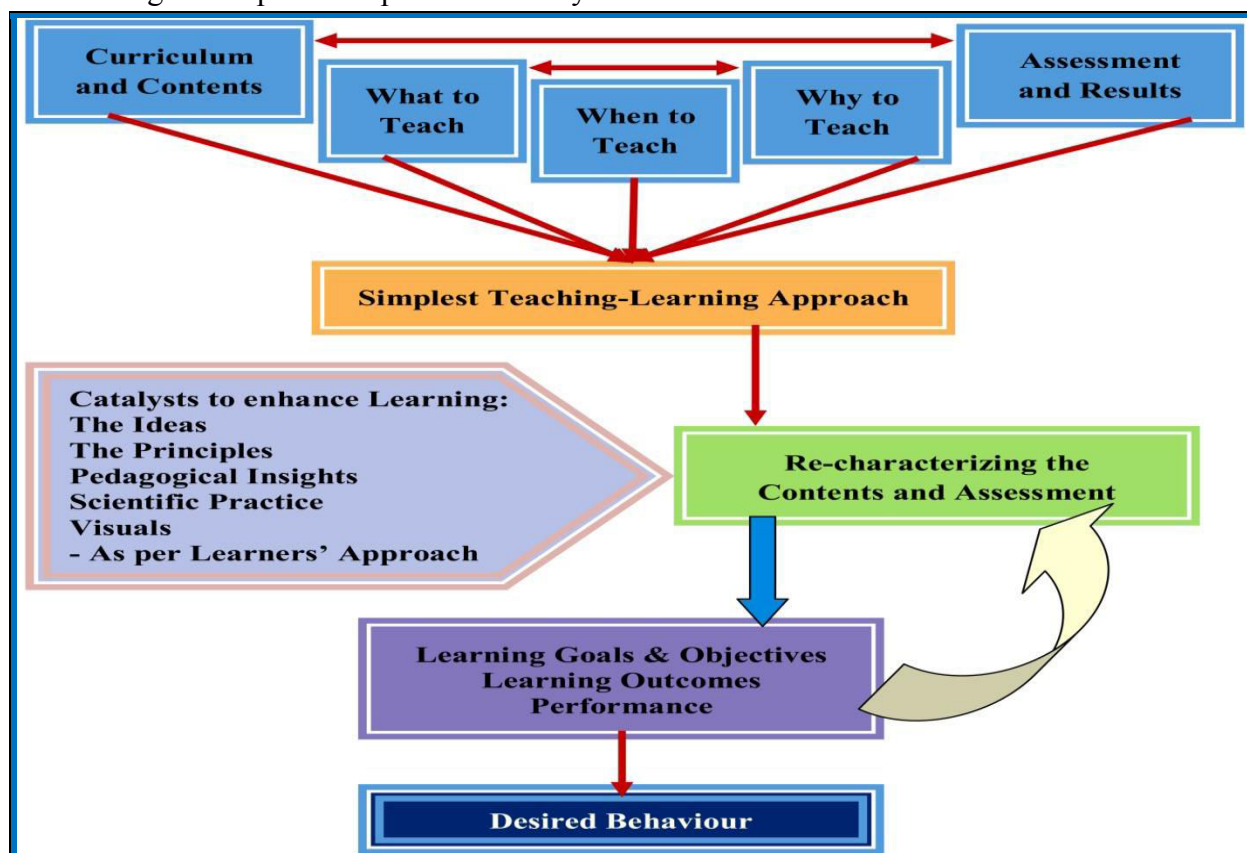


Figure 1: Teaching-Learning Model for aligning and Catalyzing the Approach and Process for Easy Learning in Chemistry

3.1 Normal Learning Outcomes

For the topic under study, normal learning outcomes may be as following:

- i.) Explain the concept of chemical bond,
- ii.) Draw the structure of hydrogen molecule or hydrogen chloride showing chemical bonds,
- iii.) Show and explain the strongest/weakest bond in a given drawing of a molecule,
- iv.) What are different types of chemical bonds,
- v.) Recognize chemical bonds in different contexts,
- vi.) Recognize the atom or atoms containing the greatest/lowest electron density in a given molecule and justify your answer,
- vii.) Provide a list of characteristics of a certain material regarding a given structure (model) and explain each characteristic, Etc.

3.2 Sequential Stages under the New Adopted Approach

Data or details pertaining to the topic under study needs to be gathered and analyzed for the simplification and better performance. This may have following perceptions and aspects:

- a) Contents in chemical bonding, and

b) Pedagogical insights regarding the teaching approach.

The sequential steps may be as given below:

- i.) Segmenting and categorizing the topic under study into simpler forms to attract big ideas, principles, visuals, etc.
- ii.) Developing more general domains to find learning goals, objectives and teaching strategies.
- iii.) Mapping all the simplified forms according to the chosen and developed domains.
- iv.) Re-organization of data and details as per mapped and chosen domains.
- v.) Proposing assertions based on the accumulated data, which will hopefully contribute to a better understanding of the studied issues.

3.3 Pedagogical Insights into Teaching of Chemical Bonding

Hurst (2002) suggests teaching bonding by presenting all types of chemical bonds based on one central model, since they all result from electrostatic forces; presenting the bonds as different entities, as is often done in textbooks, is misleading. Traditional approach or lecture method by which this concept is presented is not only nonscientific but may also generate pedagogical learning impediments.

- i.) The heart of the problem in teaching chemical bonding is the wrong presentation used by teachers regarding various structures that can be explained by different bonding types.
- ii.) The explanation regarding the formation of chemical bonds must rely on the principle of minimum energy and not only on octet theory. Often the presentation of bonding and energy is separated and the concept on energy is introduced later. These two ideas must be linked. The concept of bond energy is essential for understanding the bonding concept.
- iii.) The chemistry lessons should be taught differently - to make students understand and not just memorize. Learners must be equipped with the scientific tools that will assist them in formulating scientific reasoning with such tools they can think, get intuition, act, perform, etc.
- iv.) Questions need to be framed and asked regarding typical tendencies of chemical properties that can be scientifically explained by the students.
- v.) New teaching approach should be accepted enthusiastically.
- vi.) Things need to be simplified and provided to students with generalizations and rules because chemistry must be presented as an exact science.

3.4 Re-characterizing the Teaching of the Bonding Concept

Based on pedagogical insights, sequential stages and other details, the following key-learning goals can be formulated:

- i.) Developing an understanding that all chemical bonds are electrostatic forces according to Coulomb's law.
- ii.) Developing an understanding that chemical bonds cannot be described by a set of rigid definitions or through a dichotomous classification.

- iii.) Developing an understanding that common concepts and elemental principles should be applied for chemical bonds between two atoms first and then to molecules and lattices.
- iv.) Developing an understanding that there is a whole range of chemical bonds, which can be mapped on a continuous scale according to the strength of electrostatic forces.
- v.) Developing an understanding that there are a small number of principles and key concepts that are central and common for all chemical bonds, such as attractive and repulsive forces, the equilibrium point, bond energy, bond length, and electronegativity.
- vi.) Encouraging the ability to explain scientifically some chemical phenomena and to realize that all phenomena cannot be explained by same model.
- vii.) In order to calculate and obtain solutions for bonding problems, quantum mechanics is the accepted quantitative theory.
- viii.) New tasks should be developed based on learning performances, which examine deep understanding and improve students' ability to apply these concepts to a variety of situations.

3.5 Approaches for Teaching Chemical Bonding

Chemical bonding includes simple electrostatic force of attraction from simple atoms to molecules and lattices to complexity and their properties. There exist different types of attractions or chemical bonding: Ionic, covalent, coordinate covalent, metallic, H-bond, vander waal's forces, etc. and there exist different type of lattices like ionic, molecular, covalent, metallic, etc. The topic chemical bonding can be studied in the following way:

- i.) Single atom, existence and forces of attraction
- ii.) Meeting of two atoms lead to development of electrostatic forces of attraction, why? Electronic structure, electronegativity, bond energy, bond length, etc. can be explained.
- iii.) Concept of Vander Waal's forces, H-bond, etc. can be studied.
- iv.) Concept of different bond lengths, different bond energies can be explained.
- v.) Single polyatomic molecules, structure, polarity, etc. can be explained.
- vi.) Studies can be shifted to molecules, simpler, complex, giant, etc.
- vii.) Properties and phenomena of materials with respect to aspects of bonding and structure can be studied.

That study is always better which improve students' ability to apply their knowledge in a variety of contexts aligned with the learning performances.

3.6 Learning and Performance

Taber and Watts (2000) suggested that we should expect chemistry students to acquire some familiarity with the theoretical frameworks of current science and to develop some level of proficiency in applying their knowledge regarding chemical bonds in order to produce valid scientific explanations. If any learner is asked to answer "*Which material*

has a higher boiling point - LiF or HF? Justify". The answer "The boiling point of HF is lower than the boiling point of LiF because the hydrogen bonds between the HF molecules are weaker than the electrostatic forces between the negative ions and the positive ions in the ionic lattice LiF" is correct but it cannot be concluded that the learner answered the question by cramming or the learner really understands the concept behind it.

Here requires New Assessment Task or the Verification of Learning Outcomes. Learner may be asked "In the liquid and the solid states of water there are hydrogen bonds between the molecules. Explain in your own words what hydrogen bonds are" and "Give an example of another molecular compound in which hydrogen bonds might occur and explain why and how they may be formed". The correct answer to these questions lead to the view that learner has not crammed but understood the matter. According to Pellegrino et al. (2001), alignment of assessment tasks, with well-specified key-learning goals as well as with learning performances, is essential for students' meaningful learning, and it enables examining a deeper understanding.

4. DISCUSSION

There is a statement about people's understandings of science that there is no single knowledge gap between scientists and non-scientists, but there is, instead, a multitude of specific gaps between specialists and non-specialists in each field. Surely all scientists should agree on the meaning of basic words in our vocabulary? Unfortunately it seems that this can never be the case since our words carry with them our interpretations, experiences, beliefs and sometimes even our emotions. When others receive the same words it is their meanings they hear. Words do not restrict their meanings to one particular definition even if there is a meaning carrying the IUPAC endorsement. It is necessary that the words have the same meanings, especially when considering exchanges between novice learners (students) and more experienced learners (teachers). It does not really matter whether neutralization is a redox reaction or whether carbonated drinks boil when poured into a glass. That is unless the belief of teacher/examiner differs markedly from learners. This provides pressure for students to learn (and be taught) right answers that do not necessarily make sense. The key concern here is that we learn to tolerate that there can never be a uniform set of meanings for words within the scientific community. We must expect meanings to develop and be prepared to renegotiate meanings as we learn. There is, of course no argument for careless reasoning or sloppy vocabulary, but surely it is part of any pattern of careful thinking that meanings and significance of words and ideas are constantly re-evaluated? It is not helpful in the long term to learn meaningless words by rote. This relates to the wider issue of teacher competence. The competence required is an ability and confidence to, not only present science to their students, but also to contend science with their students (Goodwin 2000). This is necessary to have:

- ✓ Proper justification for its place in the curriculum.
- ✓ For society and individual students.
- ✓ An appropriate balance between passing examinations and learning science.

- ✓ A continuing enthusiasm for learning by the teacher.
- ✓ The critical engagement of students.
- ✓ To develop students' autonomy in learning.

The teachers require a robust and consistent story of science for themselves but it must remain legitimate for them to be continually learning and not to have known before they began teaching. What is unique about the teaching process is that it requires teachers to *transform* their subject matter knowledge for the purpose of teaching (Shulman, 1986). Pedagogical content knowledge is highly specific to the concepts being taught, is much more than just subject matter knowledge alone and develops over time as a result of teaching experience. The present study is in favour of establishing scientific frameworks that prevents pedagogical learning impediments; induce deeper understanding of the fundamental nature of topics in chemistry and realistic explanations of phenomena and introducing new assessment approaches.

5. CONCLUSION

The science (chemistry) being learned by any individual is at the boundary of their experience and, if it is to be useful it must be significant and make some kind of sense. Teachers themselves gain insights by learning with their students and this requires mutual respect of ideas as well as continuous critical evaluation in both directions. Questioning and uncertainty must be legitimate within the framework and development of national guidelines, syllabuses, programs of assessment and patterns of qualification. It is a 'question of balance', but it seems that if we are to make progress in becoming scientists or doing science - and perhaps even in remaining human - nothing must ever be quite certain. A Chemistry teacher evolves or establishes only if the any expert critically reflects on and interprets the subject matter; finds multiple ways to represent the information as analogies, metaphors, examples, problems, demonstrations, and/or classroom activities; adapts the material to students' developmental levels and abilities, gender, prior knowledge and misconceptions and finally tailors the material to those specific individual or groups of students to whom the information will be taught.

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Teacher Educators Attitude Towards Information And Communication Technology Competencies And Usage: An Empirical Study

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Dr. Shazli Hasan Khan

**Assistant Professor,
Maulana Azad National Urdu University ,
College of Teacher Education , Sambhal-U.P**

Abstract

The present study is a kind of survey about teacher educators competencies and their Information and communication technology usage in their courses. In order to better facilitate professional development for teacher educators and better prepare tomorrow's teacher educators it is necessary to effectively and successfully integrate ICTs in their classrooms and therefore it has become necessary to examine teacher educators attitude towards ICT competencies and their uses of ICT in their respective courses being taught. The objectives of the present study is to find out whether there is any significant difference in the attitude between male and female, graduate and post graduate, trained and untrained, rural and urban teacher educators towards information and communication technology competencies and its usage. A random sampling method was taken and a sample of hundred teacher educators was taken from four different teacher training colleges of Aligarh district. A self-constructed questionnaire was developed by the researcher and was used for the collection of data. The results of the findings indicate that most of the teacher educators expressed positive attitude about integration of ICT into teacher education programs as well as a positive and healthy attitude towards ICT competencies and its usage. The findings of the results revealed that the attitude of the teacher educators towards competency and usage in ICT is not affected by their gender, qualification and ICT training but it is affected by locality. The teacher educators who are belonging to rural and urban areas have been found to have significant difference in their attitude towards ICT competency and usage. Owing to

the knowledge explosion and tremendously fast changing ICT, the teachers sometimes find it rather difficult to cope with the new intellectual challenges being thrown up by the changed global and local context. This is probably one of the main reasons for the inadequate academic, professional and pedagogic preparation and insufficient level of knowledge and skills of the faculty. The teacher educators therefore need to acquire new knowledge and reliable and authentic information about the use and implementation of ICTs in the teaching learning process.

1. INTRODUCTION

ICTs stand for Information and Communication Technologies and are defined, as a “diverse set of technological tools and resources used to communicate, and to create disseminate, store and manage information. These technologies include computers, the Internet, broadcasting technologies and telephony (Blurton).”

The convergence of ICTs has turned the whole world into a global village, making it possible to foster interaction with people in remote geographical locations of the world at previously unimaginable speed. This phenomenon has also shortened the turnaround period of knowledge such that “knowledge becomes obsolete almost as soon as it is acquired or learnt”. The result of this development is that teachers are now challenged to be at the cutting edge of knowledge production, modification and application. This view has been further emphasized by the ubiquitous forces of globalization that has made it necessary to interact with diverse socio-cultural practices, sometimes at the expense of local influences. “Teacher education institutions need to assume a leadership role, in the transformation of education or be left behind in the swirl of rapid technological change” (UNESCO, 2003). “Information communication technologies (ICTs) have the potential to enhance access, quality and effectiveness in education in general and to enable the development of more and better teachers in particular” (UNESCO, 2003). Computer hardware has now become available to an increasing number of schools; more attention needs to be given to the capacity building of the key transformers, in this process, namely teachers. One can say that the teachers’ education in India is on the brink of major transformation (Rajput, Walia, 2004). ICTs are one of the major contemporary factors shaping the global economy and producing rapid changes in society. ICT has become an important part of most organizations and business in the present times (Zhang and Aikman, 2007) and it will play a dominant role in education for the coming generation too (Yelland, 2011). They have fundamentally changed the way people learn, communicate and do business. However the use of ICT as a medium has not yet taken momentum in India. The availability of resources is major obstacle to the wide spread integration of ICTs in education and teacher education in particular.

The present age is the age of information and technology. Several studies have pointed out the necessities of providing opportunities for students to learn and operate in an information age or else it would become very difficult for them to sustain in the work

place of today's society (Yelland, 2011). This requires teachers, key transformers, to be well equipped with the latest technology so as to enable students to prepare them for future. ICT can help students and teachers in developing the competencies required for the twenty first century. ICT can play various roles in learning and teaching processes by enhancing efficiency. Bransford et al (2010) had pointed out ICT potential to enhance student achievement and teacher learning. Use of ICT can play vital role in the development of student skills, motivation and knowledge (Grabe and Grabe, 2011).

1.1 Information and Communication Technology in Classroom

When used appropriately, ICTs---especially computers and Internet technologies---enable new ways of teaching and learning rather simply allow teachers and students to do what they have done before in better way. These new ways of teaching and learning are underpinned by constructive theories of learning and constitute a shift from a teacher-centered pedagogy--- in its worst form characterized by memorization and rote learning --- to one that is learner-centered.

ICT provides several types of learning that are: 1.) Active Learning: ICT-enhanced learning mobilizes tools for examination, calculation and analysis of information, thus providing a platform for student inquiry, analysis and construction of new information. Learners therefore learn as they do and, whenever appropriate, work on real-life problems in-depth, making learning less abstract and more relevant to the learner's life situation. In this way, and in contrast to memorization based or rote learning, ICT-enhanced learning promotes increased learner engagement. ICT-enhanced learning is also 'just-in-time' learning in which learners can choose what to learn when they need to learn it. 2.) Collaborative Learning: ICT-supported learning encourages interaction and co-operation among students, teachers and experts regardless of where they are. Apart from modeling real-world interactions, ICT-supported learning provides learners the opportunity to work with people from different cultures, thereby helping to enhance learners' teaming and communicative skills as well as their global awareness. It models learning done through the learner's lifetime by expanding the learning space to include not just peers but also mentors and experts from different fields. 3.) Creative Learning: ICT-supported learning promotes the manipulation of existing information and the creation of real-world products rather than the regurgitation of received information. 4.) Integrative Learning: ICT-enhanced learning promotes a thematic integrative approach to teaching and learning. This approach eliminates the artificial separation between the different disciplines and between theory and practice that characterizes the traditional classroom approach. 5.) Evaluative Learning: ICT-enhanced learning is student-directed and diagnostic. Unlike static, text-or print-based educational technologies, ICT-enhanced learning organizes that there are different learning pathways and many different articulations of knowledge. ICTs allow learners to explore and discover rather than merely listen and remember.

1.2 ICT Integration in Teacher Education Programmes

In almost all sectors of education, the role of the teachers is changing from being not only a transmitter of knowledge but also that of facilitator of the teaching-learning process owing to the onset of information and communication technology (ICT). New applications of technology and enhanced accessibility to it are introducing new possibilities of teaching and learning. The traditional boundaries of the classroom are giving way to virtual learning and online courses. All these development have profound impact on teacher education programmes and processes.

After 1980s, ICT have become an indispensable source of teaching and learning process. Initially, ICT issues quickly moved from instituting special programs for preparing individuals to become ICT specialists in schools and then infusing ICT into all aspects of teacher preparation. With the above-mentioned consequences, many actions plans were developed at National and International levels, as well as investments for ICT in teacher education. Most of the teacher education programs have been redesigning their curricula in order for the preparation of prospective teacher educators, so that they become competent users of new technologies when they become teachers (Glenn, 2002; Gotkas 2009).

In 2008, parallel to the International practices, Higher Education Council (HEC) developed new teacher education curricula for schools of teacher education, and ICT has been included in the new teacher education curricula. The main purpose of 'Computer' course is to help prospective teachers' process basic computer skills on commonly used computer applications (Gotkas, Yildirim, & Yildirim, 2009).

The integration of ICT into these courses, by the teacher educators who offer the new courses in teacher education programs has several important roles. By integrating ICT into these courses, the teacher educators can enhance the effectiveness of the courses and become role models for the prospective teachers. In the literature, good role models were recommended for prospective teachers to observe appropriate modeling throughout their undergraduate process (Kariuki, Franklin & Duran, 2010; Yildirim, 2009).

Teacher educators need to complement their content and pedagogy expertise by utilizing online facilities. Use of ICT effectively requires a change in classroom practice rather than mere acquisition of technical skills. Teachers need to familiarize themselves with possible approaches and application in the use of ICT, the facilitation of teaching and learning. These technologies along with overhead projector and computer projections have the potential to make teaching-learning and training processes more efficient and cost effective. It has opened up new possibilities of reaching out to the still un-reached disadvantaged groups and children with special needs.

In this context, for the preparation of better teacher educators so that they are able to integrate ICT into their classrooms (Bai & Ertmer, 2007; Vannatta & O'Bannon, 2011; Willis & Tucker, 2012), to better facilitate professional development for teacher educators and better prepare tomorrow's teachers educators to integrate ICT effectively and successfully in their classrooms, it is necessary to examine teacher educators attitude towards ICT competencies and their uses of ICT in their courses of teaching. Therefore,

there is a need to examine current status of the teacher educators in regard to aforementioned issues.

Consequently the present study addressed the following research questions:

- i.) What are the teacher educators perceived ICT competencies?
- ii.) To what extent do teacher educators use ICT in their courses?

2. REVIEW OF RELATED LITERATURE

Cepni et al (2006) pointed out the study on effects of Computer Assisted Instruction Material related to photosynthesis topic on student cognitive development misconceptions and attitudes. This study result showed that using CAIM in teacher photosynthesis topic was very effective for students to reach comprehension and application levels of cognitive domain.

Jasmine Kumar and et al (2007), conducted a study on “Professional competency of Teachers and Teacher Educators in relation to their ICT usage” with the sample of 30 teacher educators and 50 teachers from Government, Government-aided and aided minority institutions in Chennai city, Tamil Nadu reported that professional competency and ICT usage are significantly related.

Angel, R (2007.), conducted a study on, “Infusing ICT in teaching learning Process: A Reflection” in places namely Mysore, Pondicherry and Tumkur. It was hypothesized that Computer Assisted Instruction approach would be more effective than traditional approach on acquisition and retention of knowledge and it would be an effective reinforcement tool. The students undergoing the CAI approach has found to score more in knowledge acquisition test and in the test conducted after reinforcement than the students undergoing traditional approach. The mean scores reveal that the students under CAI approach has scored more than the students under traditional approach in the delayed test conducted after a month. Thus infusing ICT in teaching learning process enhances the teaching and learning which in turn provides quality education.

Illayaperumal (2007) conducted a study on “Perception of student teachers towards the role of technology in education for Sustainable Development”, with the sample of 100 student teachers (50 B.Ed and 50 D.T.Ed) selected from the Union territory of Pudducherry. He concluded that the perceptions of student teachers are above average. Also a significant difference is observed between groups regarding locality, type of selection and community. Therefore it is necessary form our future teachers to have the knowledge and understanding of the role of ICT in Sustainable Development.

Gulbahar, Yashmin and Guven (2009), has made a study on, “A survey on ICT usage and perceptions of Social Studies teachers in Turkey” with the sample of 326 social studies teachers selected from the primary schools located in Turkey. They reported that although teachers are willing to use ICT resources and are aware of the existing potential they are facing problem in relation to accessibility to ICT resources and lack of in-service training opportunities.

Gotkas, C & Yildirim (2009) has made a study on “Teacher Educators’ ICT Competencies and Usage” with 115 teacher educators in 18 Schools of Teacher Education (STE) and through interview with 60 teacher educators in 03 STE from the capital city Ankara, Turkey. They reported that most of the participants expressed positive perceptions about the integration of ICT into teacher education programs.

3. SIGNIFICANCE OF THE PRESENT STUDY

To better facilitate professional development for teacher educators and better prepare tomorrow’s teacher to integrate Information and Communication Technologies (ICTs) effectively and successfully in their classrooms, it is necessary to examine teacher educators’ ICT competencies and their uses of ICT in their courses. The study has the following potential benefits. In the first place, it informs teachers’ readiness to use ICT. Secondly, teachers’ experiences of using ICT shed light on proper integration of ICT in teaching and learning, and in turn, these experiences help to determine teachers’ professional development needs for proper CIT integration in the classrooms. Finally, it informs teacher preparation colleges and educational technology curriculum developers on the actual use of ICT in context. It is from such contextual uses of ICT, the concerned parties can improve their programmes (Gotkas & Yildirim, 2009).

4. STATEMENT OF THE RESEARCH PROBLEM

This research study examined the teacher educators’ perceived ICT competencies and their ICT usage in their courses. The topic of research is, “*Teacher Educators Attitude towards Information and Communication Technology Competencies and Usage: An Empirical Study*”.

5. OBJECTIVES OF THE STUDY

The present study has undertaken following objectives:

- I. To study the difference between male and female teacher educators’ attitude towards competency and usage in ICT.
- II. To study the difference in attitude between urban and rural teacher educators towards ICT competency and their usage.
- III. To study the difference between post graduate and graduate teacher educators’ attitude towards competency and usage in ICT.
- IV. To study the difference in attitude in teacher educators towards ICT competency and usage on the basis of their training in ICT.

6. HYPOTHESES

The following hypotheses have been constructed in order to carry out the present research study:

- I. There is no significant difference between male and female teacher educators’ attitude towards their competency and usage in ICT

- II. There is no significant difference between urban and rural teacher educators attitude towards their competency and usage in ICT.
- III. There is no significant difference between post-graduate and graduate teacher educators' attitude towards their competency and usage in ICT.
- IV. There is no significant difference in attitude between ICT trained and ICT untrained teacher educators in their competency and usage in ICT.

7. METHODOLOGY OF THE STUDY

The technique of random sampling was used for data collection and the data was collected from a sample of hundred teacher educators from four different teacher training colleges of Aligarh district.

I. Tools of the Study

Data was collected with the help of three tools which were developed by the investigator himself. The tools used for data collection were:

- a. ICT usage survey tool
- b. ICT competencies scale
- c. Biographical information blank

The Information and Communication Technology usage survey and ICT competency scale was developed by the researcher and was used to collect data in order to do the present research study. The ICT usage survey was composed in three parts. The first part of the survey consisted of twenty four items regarding teacher educators. The first part of the survey consisted of twenty four items regarding teacher educators' software use, as well as other instructional tools and materials usage in the teaching-learning process. The purpose of this part was to find out the self-expertise level of the teacher educators. The second part consisted of nine items about preferences for professional development on information gathering and support. The third and final part consisted of eight items about factors that encourage teacher educators' usage of technology. The perceived ICT competencies were examined using the ICT competency scale in the form of a questionnaire. It consisted of twenty four items. In the biographical information blank the participants filled in their personal data like their post of teaching, their age, gender, total teaching experience and their qualifications etc. The participants rated their levels of agreement in the questionnaire statement by using a five-point Likert type scale.

II. Statistical Techniques Used

The statistical techniques that were used for the analysis of the data are: Mean, Standard Deviation and 't' ratio.

8. RESULTS AND DISCUSSION

Hypothesis 1: There is no significant difference between male and female teacher educators' attitude towards their competency and usage in ICT.

Table 1: Attitude of Teacher educators towards competency and usage in ICT in relation to gender

S. No.	Gender	N	Mean	S.D.	t-ratio	Level of significance
1.	Male	40	207.77	25.02	1.52	Not Significant*
2.	Female	60	200.34	21.98		

**Not significant at 0.05 level*

The table 1 reveals that t-ratio between mean scores of male and female teacher educators has been found to be 1.52, which is not significant at 0.05 level. So, there is no significant difference between male and female teacher educators in their attitude towards usage and competency in ICT. The null hypothesis is accepted.

Hypothesis 2: There is no significant difference between urban and rural teacher educator's attitude towards their competency and usage in ICT.

Table 2: Attitude of Teacher educators towards competency and usage in ICT in relation to locality

S. No.	Locality	N	Mean	S.D.	t-ratio	Level of significance
1.	Urban	85	204.86	24.34	2.24	Significant
2.	Rural	15	194.47	14.77		

**Significant at 0.05 level*

The table 2 shows that the t-ratio between mean scores of urban and rural teacher educators has been found to be 2.24, which is significant at 0.05 level. So there is significant difference between urban and rural teacher educators in their usage and competency in ICT. The null hypothesis is rejected.

Hypothesis 3: There is no significant difference between post-graduate and graduate teacher educators' attitude towards their competency and usage in ICT.

Table 3: Attitude of Teacher educators towards competency and usage in ICT in relation to qualification

S. No.	Qualification	N	Mean	S.D.	t-ratio	Level of significance
1.	Post Graduate	35	204.71	21.82	0.45	Not Significant*
2.	Graduate	65	202.55	24.36		

**Not Significant at 0.05 level*

The table 3 reveals that the t-ratio between mean scores of post graduate and graduate teacher educators' has been found to be 0.45, which is not significant at 0.05 level. So, there is no significant difference between post graduate and graduate teacher educators in their attitude towards their competency and usage in ICT. The null hypothesis is accepted.

Hypothesis 4: There is no significant difference between ICT trained and ICT untrained teacher educators in their attitude towards their competency and usage in ICT.

Table 4: Attitude of Teacher educators towards competency and usage in ICT in relation to their training in ICT

S. No.	ICT training	N	Mean	S.D.	t-ratio	Level of significance
1.	ICT trained	40	207.77	25.02	1.52	Not Significant*
2.	ICT untrained	60	200.34	21.978		

**Not Significant at 0.05 level.*

The table 4 reveals that t-ratio between mean scores of teacher educators based on their ICT training has been found to be 1.52, which is not significant at 0.05 level. So there is no significant difference between ICT trained and ICT untrained teacher educators in their attitude towards competency and usage in ICT.

9. FINDINGS

- i.) There is no significant difference between male and female teacher educators in their attitude towards ICT competency and usage.
- ii.) There is significant difference between urban and rural teacher educators' in their attitude towards competency and usage in ICT.
- iii.) There is no significant difference between post graduate and graduate teacher educators' in their attitude towards competency and usage in ICT.
- iv.) There is no significant difference between ICT trained and ICT untrained teacher educators' in their attitude towards competency and usage in ICT.

Suggestions for Further Study

- i.) The present research could also be done on state level.
- ii.) The same study can also be done on pupil teachers.
- iii.) Study can be done to know the awareness of teacher educators towards ICT.
- iv.) The same study can be done on secondary and senior secondary school teachers.
- v.) The same study can also be done on inter-state level.

10. CONCLUSION

It can be very well seen from the analysis and findings of the above results that the attitude of the teacher educators towards competency and usage in ICT is not affected by their gender, qualification and ICT training but it is affected by locality. The teacher educators who are belonging to rural and urban areas have been found to have significant difference in their attitude towards ICT competency and usage. From the above discussion, it is revealed that teacher educators are lacking in ICT related pedagogical skills and therefore needs a comprehensive training program in ICT. Owing to the knowledge explosion and tremendously fast changing ICT, the teachers sometimes find it rather difficult to cope with the new intellectual challenges being thrown up by the changed global and local context. This is probably one of the main reasons for the inadequate academic, professional and pedagogic preparation and insufficient level of knowledge and skills of the faculty. Besides this, traditional and modern methods of teaching, outdated knowledge and information and lack of skills, teachers attitude, aptitude and authenticity of their sources of knowledge are some of the other core issues that are to be addressed immediately. The teacher educators therefore need to acquire new knowledge and reliable and authentic information. It has become a common parlance that, for a teacher education program without an integration of ICT, it could not be said to be a complete one.

ICTs can be used as powerful tools so as to help learners access cast knowledge resources, collaborate with others, consult with experts, share knowledge, and solve

complex problems using cognitive tools. ICTs also provide learners with powerful new tools so as to represent knowledge with text, images, graphics and video. Hence to be productive and at the same time to be in a position to feel the global pulse, teacher educators as well as prospective teachers should be well prepared for using ICT in education and in teacher education programmes. The incorporation of ICT in education and training programmes has profound influence in teaching and teacher preparation. Modern pedagogy has focused on teacher educators' instructional practices and knowledge of the curriculum and requires that they develop applications within their disciplines that make effective use of ICTs to support and extend teaching and learning. Teachers must be prepared to empower students with the advantages technology can bring. Schools and classrooms, both real and virtual, must have teachers who are well equipped with technology resources and skills and who can effectively teach the necessary subject matter content while incorporation technological concepts and skills.

For education to reap the full benefits of ICTs in learning, it is essential that pre-service and in-service teachers have basic ICT skills and competencies. Ultimately, the power of ICTs will be determined by the ability of teachers to use the new tools for learning to create rich, new, and interactive learning environments for their students. Teacher education system empowered by ICT-driven infrastructure can have a great opportunity to come up to the centre stage and ensure academic excellence, quality instruction and leadership in a knowledge-based society. Therefore it seems to be necessary for our future teachers to have the knowledge and understanding of the role of ICT in teaching learning process.

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Role, Rank, Dignity And Unity Of Women In Contemporary India

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1st	Dr. Judith Lewis	Professor 'Sarvodaya' Welfare Institute St. Fidelis Friary Monte Mariano, Farangipet Bantwal Taluku , Dakshina Kannada
2nd	Dr. Joachim D'Souza	Director 'Sarvodaya' Welfare Institute St. Fidelis Friary Monte Mariano, Farangipet Bantwal Taluku , Dakshina Kannada

Abstract

Dignity to each created being and the creation of the creator is the utmost respect and prospect to the creator and the protector of the universe. Woman and the man is the epitome of the creation of the creator. The image and the likeness of the God are to be experienced and expounded by saluting one another and living in unity and diversity. God has never ceased or eased to speak, God speaks ever anew in every event and moment with content, in every change and in every age without any damage. Every man or woman in need is God's urgent word, deed and bread. There is much confusion and fusion today about the modern concept and precept of Indian womanhood. The injustice and discrimination against women cover every area of social living and every stage and page of life. Emancipation of women from discriminative attitudes, unjust systems and structures of exploitation created by a male-dominated society is a crying need today, especially in India where, as is well known, they are denied even the right to be born, let alone the other forms of injustice. Objective of the study is to enhance the dignity of women and to explore the unity is the possibility in the emancipation of women.

1. INTRODUCTION

God has never ceased or eased to speak, God speaks ever anew in every event and moment with content, in every change and in every age without any damage. Every man or woman in need is God's urgent word, deed and bread. There is much confusion and fusion today about the modern concept and precept of Indian womanhood. The world over, the image of Indian women is that they are dynamic, educated, dedicated, committed and liberated. The injustice and discrimination against women cover every area of social living and every stage and page of life. Traditional cultures, institutions, customs and myths go to reinforce the stereotyped images and roles of women and legitimize the unjust treatment meted out to them. Emancipation of women from discriminative attitudes, unjust systems and structures of exploitation created by a male-dominated society is a crying need today, especially in India where, as is well known, they are denied even the right to be born, let alone the other forms of injustice.

If God created woman so graceful and beauty full why does modern man with all the modern inventions and sophisticated ideas hesitate: to accept her as his true self? what made man to destroy and betray the goodness of God by battering and shattering the image and immense love of God? What are the modern problems and difficulties which instigate to pulverize the very existence of women?

2. INDIAN WOMAN IN A MAN'S WORLD.

In this age of mass communications and high pressure advertising, none of us can escape the impact of images. Images smile, stare, grin or grimace at us from the pages of books, magazines and newspapers and from video, Television and movie screens. There are also those more subtle and perhaps faceless images which are projected and promoted by our families, culture, traditions, and other image-builders and image batterers.

2.1 Some traditional Indian Images of women:- Whether we are Christians, Muslims, Sikhs, Buddhists or Janis, most of our "Indian's" stems from our common Hindu past; so, in discussing anything Indian, we are forced' to go back to our ancient Hindu roots.

- 2.1.1. The "Mother Maharani" Image:-** Mothers are not just loved and respected, but they are placed on a pedestal and made maharanis. (cf. Jeevadhara 1987, p.61) The two best examples of the Virtuous wife are sita (1) and Shankuntala (2)
- 2.1.2. The "Virtuous wife and Happy House wife" image:-** A women when gets married, she is wedded not only to her husband, but also to his house and all the work in it.
- 2.1.3. The "Weak creature needing Male protection" image:-** From their childhood onwards, women are told they should not go out of the house alone, should be accompanied by a male protector at all times etc. This protection is the perfect means of controlling women (3).

- 2.1.4. The "Temptress" image:-** Ample publicity has been given to this image: Menaka (4) and Shurpanaka (5) are two of the mythological temptress who come to mind.
- 2.1.5. The 'Property of Men':-** In this image a woman is considered to be the property of her father before her marriage. Since wives are believed to be the property of their husbands, a man who bullies, beats or even burns his wife does not regard himself as a wrong doer, for he is only exercising his property rights (6).
- 2.1.6. The "Sex object" Image:-** Women are looked upon primarily as physical bodies created to satisfy the lusts and look of men. As a result, men feel free to use women's bodies as they please; for sexual pleasures and procreation, or to sell merchandise by depicting women's bodies in a vulgar and suggestive seductive manner. Prostitution and rape are all evidences of the tenacious influence of this image on society.
- 2.1.7. The "Unclean Creature" Image:-** During menstruation And after childbirth, both of which are natural bodily functions, women are treated as unclean creatures and are barred from participating in social and religious activities. (cf. Roles and Rituals for Hindu women Julia Leslie p.165). In very orthodox Hindu families, women are segregated from the rest of the family in a special room during their period of "uncleanness" (Roles and Rituals for Hindu women. p.165). This is another way to control women and limit their freedom while, at the time, making them feel inferior and loath-some to others.

3. STATUS OF WOMEN IN INDIAN RELIGIOUS TRADITIONS

3.1.Hinduism:- In order to get an idea of the 'image of women' projected by Hinduism one has to study what the Hindu scriptures it has to say about the personality, potential and character of women. According to the Hindu scripture like *Manu Smriti* the male and the female of the human species represents the two halves of the creator himself. These the *Manu Smriti* says:

Brahma divided himself into two,
Man with one half and woman with
the other.....(Marm.1,32) (7).

3.2.Buddhism:- In the pre-Buddhist days the status of women in India was on the whole low and without honor. A daughter was nothing but a source of anxiety to her parents; for it was a disgrace to them and inauspicious as well if they could not marry her, yet if they could, they were often nearly ruined by their lavish expenditure on the wedding festivities. Wife simply as a child-bearer; her life was spent in complete subservience to her husband and her parents

3.3. Jainism: As a way of life Jainism lays stress on self-denial restraint of renunciation, for both men and women. Woman has a unique position as *Jina matha*. The woman who gave birth to the *Thirthankara*, a Jain deity.

3.4. Zoroastrianism: Parsees who practice their religion give women a position of honor in the family and society. They have a right to property, education, divorce and re-marriage.

3.5. Tribal Religions: In the religion activities of the house and the group women have a role but it is denied to them in the special worship of tribal duties.

4 .PROBLEMS OF WOMEN IN THE CONTEMPORARY INDIAN SOCIETY

4.1. Cultural pressure that condition the upbringing of a girl:

Today, the birth of a son is welcomed, and that of a daughter tolerated and even resented. Girls take care of younger siblings yet the attitude towards them is "**you need to be protected. (8)**" Restrictions are enforced on her movements especially after the onset of puberty.

4.2 Economic effects:- The condition of women in developing countries like India is more miserable than the rest of the world in almost every field of social life. The percentage of workers in the female population of the country indicated they constitute nearly 20 percent of the age- group 15 to 59 years. However 73.91 percent of the total working populations of women in India were in agriculture, 46% as agricultural laborers' and 28% as cultivators (9).

4.3 Political Pressure:- Political participation, of necessity means participation in power, in decision-making and it means either partaking in the coercive powers 'of the state or being confronted by them. It means participation in public life as opposed to domestic seclusion.

4.4 Educational Environment:- There is a direct link between education, employment and social status enjoyed by a woman in society. The National committee on women's education (1958-1959) had been disturbed by the widening gap in the education of boys and girls.

4.5 Marriage and Marginalization:- Early marriage is prescribed by the elders as a solution to get of her 'burden'. (cf . Jeevadhara Jan.k 987,p.23). Child marriages are frequent even today in several parts of India. The girl-child is married off early without any serious efforts being made to prepare her for the future, mentally and physically she remains handicapped. She becomes a mother before her body is physically ready to create, nurture and deliver into the world-the next generation! - too small a body gives birth to a low-weight, unhealthy baby- and, another cycle begins.

4.6 Widow-hood:- In India, a married Hindu woman is most commonly blessed with the words "*sada suhagin raho*", meaning may you never be snatched of your wifehood. The death of the husband is considered as an extremely unfortunate event for women, because the women's lives and status are completely dependent on the husbands.

4.7 Dowry System, bride burning and wife beating:- The dowry system originally harmless in a feudal society, has become a social lever. Families go up and down the social ladder depending on the amount of money that can be negotiated when settling marriages.

4.8 Rape:- Crimes against women are increasing at an alarming rate in India today. It seems rape is becoming high fashion and news for media men. It is perhaps the only crime where guilt and shame are attached to the victim. The victim is "**tainted**" for the rest of her life. Her relationships with friends, relatives and particularly males may be permanently marred.

4.9 Devadasi Development:- This social institution gravely affects the life and social status of women. It is called '**Devadasi**' in the south and '**Murali**' in Maharashtra. **Devadasi** are gods' slaves and on becoming mature they are given in marriage to a deity. Every year on festivals namely on the full moon of chaitra (April, May) and of Magashira (November, December) thousands flock to fairs at soundatti Hill. Many girls are married to the brass faced god. The priest ties tali '**Mangala Sutra**' the auspicious thread to their necks and the girls are pronounced as married. Thus every year 3000 to 4000 girls are married to '**Yellamma**' at Soundatti Hill (10). In the olden days '**Devadasis**' did chores like fanning the idol and carrying the light called '**kumbarathi**' but their most important duty was singing and dancing before the idols. The priest also used them as mistresses. The handmaidens of god gradually turned out to be temple harlots meant for the priests. In course of time they became common prostitutes serving anyone who can ply. Some of the Maharashtra parents offered their girls were called as '**Murali**.' These girls sang, danced and performed at night worship so long as they were young and beautiful. But when they became old they had a very miserable life.

4.10 Prostitution Promotion:- Prostitution is the act of a female or male, payment offering he/his body for indiscriminate sexual union, for payment in cash or kind, with a man/woman who is not the husband or wife. Kathleen Barry defines prostitution as "the provision of sexual services in exchange for material gains. This provision may be induced by one or more of a variety of conditions: Physical coercion (abduction, seduction socio-economic coercion, sexual abuse, poverty); acquisition by purchases; individual decision." Barnett, C. Harold says that "the prostitute is the shared property of several men. She is denied chastity and exclusivity and she has to sell her sexual services. Gandhi has the following to say on prostitution "It was a matter of "bitter shame and sorrow of deep humiliation." He considered prostitution "Moral Leprosy." but it is a clearly known fact that in prostitution both men and women are equally involved in the crime. Yet the word is more associated and applicable to women. Prostitution of women takes various forms such as call-girls, Cabaret artistic (who make money by stripping themselves in public) and rituals and religious practices (11).

5. TOWARDS A THEOLOGY OF LIBERATION OF WOMEN IN THE INDIAN CONTEXT

5.1 Education to critical consciousness:- In our analysis as the low status and exploitation of Indian women, massive illiteracy was one of the glaring facts, Illiteracy breeds passivity, fatalism, uncritical attitude leading to the acceptance of one's oppressive inhuman conditions as God's will.

5.2 Justice to the poor:- The poor women are all around us. Their number is increasing and their situation is getting worse. Our society is such that some can enjoy affluence and luxuries if others are deprived of what they need for a decent life (12).

5.3 Income generation for women:- The self-employed women's association of Ahmedabad, referred to as *SEWA*, is an example of how women from the lower socio-economic class can join together to be viable force.

5.4 Participation in Politics:- The Gandhian contribution to women's mobilization was no doubt a very significant one during the independence struggle. Gandhi succeeded in mobilizing women in large numbers for *satyagraha*, civil disobedience, fasts and spinning. He called women for civil rebellion against unworthy and undesirable restraints (13).

5.5 Marriage based on love:- God has made woman and man to share life. Marriage has to be born out of a relationship of love and not-out of compulsion and dowry.

5.6 Inculcation of moral values:- We may be optimistic in thinking that the problem of *devadasi* and prostitution would disappear from the society if women have the necessities of life and certain degree of comforts and economic security. Through the formal and non-formal education women have to be conscientized to assimilate certain values in life and practice them in their daily life; the immoral and not becoming things, movies, and practices should be banned from the root itself. More recreation facilities and job opportunities may help men to direct their energy in building up of the humanity and not destroying it.

6. CONCLUSION

There is a long road ahead. At times the going will be difficult and dangerous. Hearts and structures cannot be changed overnight. Down the centuries women were denied such new life. This is an aberration. It is the misinterpretation of the creator. Man arrogated to himself the prerogative of God so that the former could call the world "**man's-world.**" Both man and women are in God's world on an equal footing. Hence women's liberation is ultimately a human liberation. The plight of Indian women as a whole is probably not as bad as that of Jewish women in the first century, Palestine. In particular areas, however, her lot may have been far worse. Too often do we hear about wife-beating and wife-burning, dowry deaths, forced suicides, flesh trade and other sexual crimes against women? Women are still inferior, second-class citizens, suffering from many disabilities. They are thoroughly exploited as a source of cheap labor.

Man cannot live in an island and men cannot live as normal person without the complementary sex. The creation of the creator is so beautiful and bountiful; it should be enriched and enhanced at all time and all the moment. Respect to each other and

acceptance to one and all is to be the hall mark and the trade mark of human being. Women and men make one creation, one globe, one nation and one humanity. This is our destiny and forward march to the unity.

7. END NOTES

- [1] Wife of King Rama in the Epic "Ramayana."
- [2] Wife of King Dhushyant in Kalidas "Shakuntala."
- [3] Stella Faria and CO; The Emerging Christian Woman, 77.
- [4] Menaka-tempted Vishwamitra while he was meditating.
- [5] Shurpanakshi-tempted Lakshmana to marry her.
- [6] Stella Faria and CO; The Emerging Christian Woman, 78.
- [7] K.V.K. Thumpuran, "Hinduism and its impact on Women," S.K.Chatterji, Religion and Society, 2 (June 1985), 13.
- [8] Jessie B. Tellis Nayak, Indian Womanhood then and now, 12.
- [9] Jessie B. Tellis Nayak, Indian Womanhood then and now, 47.
- [10] Sushila Mehta, Revolution and Status of Women in India, 52
- [11] Jessie B. Tellis Nayak, Indian Womanhood then and now, 98-99.
- [12] Gustavo Gutierrez, Theophrastus 11912, 175ff.
- [13] Stella Faria and co. The Emerging Christian Women, 203.

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Architectural Survey Of Sri Vinayaka Temple At Udumalpet In Tripur District

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Dr. K. Manivannan

**Assistant Professor
Department Of Indian Culture & Tourism
Government Arts College (Autonomous)
Kumbakonam-Tamil Nadu**

Abstract

Sri Prasanna Vinayka temple is located to the west of Udumalpet of Tripur District. It is here that for Vinayka, a separate Sannithies has been constructed for the first time and a very big Vinayka figure has been established. The temple faces to the east and has many sub- Sannithies. Near to this temple there are temples that possess the architecture of today. They are the known Kannika Parameshwari temple and Mariamman Temple. The aim of the research paper is to trace out the architecture of Vinayka Temple.

1. INTRODUCTION

Sri Prasanna Vinayka Temple is renowned for its many architectural patterns. The temple's organs like the upana the 'Athishtana' the Pada. The 'Prasthara' the Griva, the 'Sikhara' and "Sthubi" have been put up in accordance to the Agama. Though the upana is seen a bit concealed the Athishtana has been clearly shown. In the 'Athishtana' the organs have been regularized. The Mahapadma has been well carved and is put up on a less height of Jagadi. The Padmas have been not only well engraved but also in the corner portions many pretty birds have been shown which enable one to say that the features belong to the later days of the Nayaks Next to the 'Mahapadma, Kumuda is seen as Virutha Kumuda.

2. METHODOLOGY

To prepare the manuscript analytical, comparative and descriptive survey methods have been used.

3. BACKGROUND TO STUDY

The artists of today have shown the Kumuda and have next shown the Kala an element in a simple way. Next to the Kumuda showing such craftsmanship can be considered as the days of the cholas. Moreover the 'Kaboda' has been carved accordingly and on it simple kudus have also been chiseled. On the southern portion of the sanctum more than 14 kudus have been carved. Next to the 'Kaboda' an organ by name 'Kanda' and 'Pattihai' have been carved which is a feature generally followed. But it bears the Dravidian art and architecture completely. It is to be understood that in the sanctum craftsmanship of this sort increase the beauty of this part.

4. ARCHITECTURAL CONTEMPLATION

The present day artists who have shown the Athistana clearly have also been attentive in the Pada portion. The artistic excellence of the half- pillars on the foot portion completes this part. The Devakoshtas have been carved and the excellent archways have been shown. But in the 'Devakoshta' no divine figures have been kept. This can be understood as the impact of the Kongu Pandyas. Among them in the sanctum it has nearly 4 pilasters have been shown. All the sides of the pillars are in the simple shape of the Bramakanda.



Figure 1: Entrance of Temple

At the entrance to the Artha Mandapa of this Sannithies two beautiful pillars have been shown which reflects the growth of Dravidian architecture and the two pillars are

considered as two artistic treasures. The artists of the present days who have carved these pillars have also engraved pretty foot portion for it. Near to this the Bramakanda portion has been shown. Many decorative designs and Nagabandas are found here. Near to the Nagabanda the figure of the beautiful Vishnukanda has been chiseled. To the western side of it figures like the kudam, the Thadi, Padma and the Palahai have been shown with decoration which exhibits not only the development of architecture but also a turning point in the art. Apart from this on the western side of the pillar in accordance to the place the Veerakanda and the Pushpa Pothihai have been shown. According to the place at its entrance portions many decorative motifs and Kodikarukku craftsmanship are found. On the northern side of the sanctum near the Devakoshta the beautiful Piranala has been put up. Such kind of structures belongs to the days after the Nayaks.

Next to this on the half –pillars i.e., the pilaster, the ‘Malasthana’ the ‘Thadi and the petal have been engraved. The next to the above portions namely the ‘Veerakanda’ has been beautifully carved and on it the “Pushpapothihai” are seen. On the half-Pillars next to the “Palahai” the way the ‘Pushpa Pothihai’ has been shown can be further understood. The entire half –Pillars lead to the ‘Kala’ the organ in the ‘Athishtana’. On the archways of the Deva koshta there are many floral designs faces of elephants and the mahara archways. These type of features are also shown in the Artha Mandapa. The Artha Manadapa and the sanctum has been joined by the ‘Antharala’. On the outside parts of the Antharala a window made of stone has been constructed which shows the ability and artistic taste of the artist.

On the western side of the sanctum also such artistic excellence has been carved which need to be studied. The half –pillars found in the ‘patha’ portion of the sanctum are longitudinal which reminds of the days of the Cholas. It is novelistic to see the sculptures in the Devakoshta. And in the ‘Mahamanadapa’ there is no devakoshta sculpture. But it can be seen that the “Artha Mandapa Deva Koshta has been carved slightly broader. The artistic works of the modern days which have found in the sanctum and Antharala & Artha Mandapa have slightly of a different measurement.

The Artha Mandapa is slightly broader than the sanctum. The same ‘Athishtana’ structures, the Pada the Pillared walls and the ‘Deva Koshta’ have been carved is understood such mensuration beautifies the outside parts. The Prasthara here is a simple structure. On the southern side of this Prasthara nearly seven kudus have been carved. On the western side of the Prasthara there is no face of the elephant or under the prasthara the rows of yali friezes. The features of the art of architecture has been wholly abided since next to the Prasthara the roof is found the rap in between these structures, the faces of the elephants have been here and there shown. The information given till now is about the southern side of Arulmigu Prasanna Vinayaka Temple. On the northern side, such types of artistic features have been regularized. The Athishtana and the organs like the kumuda, the kala, the kaboda, the Kanda and the Pattihai have been exhibited. The koshta and the veerakanda reflect the same artistic excellence. In architecture such type of craftsmanship belong to the early days can be known. But here the artistic

features of the days of the Pallavas, the cholas, the Pandyas and the Vijayanagar Nayakas.



Figure 2: View Of Sri Prasanna Vinayka temple

4.1 The Muha Mandapa

This Mandapa has two rows of pillars. In each row more than five pillars have been installed. Though the lower portions of the pillars have been shown in a simple manner and all the pillars bear the same structural artistic skill related to decoration have been shown. In the centre portion the 8 sides and the four sides pillars beside it have been carved. The pothihai portion of pillar has the same shape of the Ethazhl. The Vidana portion have similar architectural motiff can be known. The artists of the modern days who have engraved such minute figures have not shown much involvement in the art and architecture. Hence the artistic trends related to it are very minimum decoration. In the prahara of Sri Prasanna Vinayka Temple many pillars have been constructed. Since all have been built at the same time they bear the same traditions of architectural features. In the Muhamandapa the Padma Peeda has been built.

4.2 The Vimana

This temple bears the architectural designs of the present days and has a beautiful Vimana. This Vimana belongs to the Thirithala type and it is a stucco structure bearing many divine Padmas. On the first floor many stucco grafts and kudas have been shown. Near it vehicles and streets have been structured. On the first thala each part resembles a

small temple structure which gives an elegant look at the Vimana. Like the architectural designs being followed in the first tala the second tala also possesses the same. In this koshta and many stucco grafts have been bear embedded. The grivakoshta and the figures related it can be known. The sikhara is cirucular –shaped and the sthubi is also found here. These architectural structures are of the present days can be understood.

4.3 Sri Viswanatha Sannithi

In equal status to the Sannithi of Arulmigu Prasanna Vinayka the Viswanatha Sannithi in the sitting posture faces to the east. Its architectural craftsmanship is slightly different from the Prasanna Vinayka Sannithi that is nearly. To the western side of the sanctum next to the Upana a beautiful Athistana has been carved. Here the Padma artifacts are shown decoratively. Next to the Padma the organ Tadi is lifelike. Beside it the kumuda has been carved with decorations. On the upper part of the kumuda, the kala has been carved and on it the Pattihai has been shown. Here there is a kanda with another pattihai. In the Athistana no kaboda the kudu has been shown. Such type of Athistana structure is varied from the above mentioned Prasanna Vinayka Temple can be noted.

Next to the Athistana, the pada has been shown. In the Patha, Deva koshtas and sub-sannithies are appeared. The half pillars possess the same features as found in the temple mentioned above. Wonderful Deva Koshtas have been carved. In that placing of divine figures belong to the modern days. The half pillars are 4 sides. In that the Thadi the Ethazhl and the palahai have been joined. The Veerakanda and the Pothihai are annexed to the Prasthara. In architecture the explanations given so far are about the western side of sanctum. To the western side of in the Deva koshta the figure of Lingodhbava is in the sitting posture facing to the west.

In Viswanatha Temple the southern side has the Athistana, the Pada and the Presthara like the western side. Moreover it has similar craftsmanship and measurement. The Architectural artifacts lead upto the Muha Mandapa, since it is the southern side. Deva koshta the figure of Datshanamurthy faces to the south. Next to this the model structures of the deva koshta and its structures are seen. Kumuda with various beams the Jagadi, the mahapadma adds beauty to this portion. All the half pillars are of the same structure measurement and decoration. The Deva koshta are ways the mahara figures, the pushpa pothihais on its either side add the beauty of this part. In the prasthara nearly more than 15 kudas are seen in a very simple manner. Furthermore on its western side in certain places the faces of the elephants are shown. These link the Vidhana and the prasthara. All the pilasters possess the same decoration.

The Devakoshta where Datchinamurthy is seated has risen to the leval of a small sannithi. In the Artha mandapa as well as in the muha mandapa architectural designs cited above are reflected with no kind of varied craftsmanship than indiscipline and matching connection in the art. The artists of today have set many figures in the karpagruha. Devakoshta but have not attempted to carve any figures in the Artha mandapa Devakoshta. Like the other temples there is no kumbapanjchara or decoration for the kodikkarukku here. From the sanctum to the front-Mandapa there is the same

features, hence there is a high beauty about it. All the features have been carved regularly. According to the place entrances have been put up.

Such type of artistic excellence has been shown in Sri Viswanatha temple on the northern side. The above said Athistana structure the Pada and the Prasthara craftsmanship have been shown. The divine figures are seated in the sanctum and the Deva koshtas of the Artha mandapa. They are installed according to the background of the Agama. The Pranala has been carved as in the Prasanna Vinayka Temple. There the faces of the elephant have been shown. In the Deva koshta of the Artha mandapa divine figure has been kept since it is Durgai, Annai appears only here and endows blessings to the devotees.

4.5 Sri Chandikeswara Sannithi

With artistic trends near the northern side of the Deva koshta of Sri Viswanatha Temple facing to the south Chandikeswarar Sannithi has been constructed. Though its 'Athishtana' has been shown in simple manners the architectural features can very easily be identified. Near to the Athishtana, the Pada has been shown. The half – pillars are found here also. In the prasthara many kudus have been carved and are noted for simplicity. The wall-pillars found in the Pada portion have been shown in a simple manner. But its Pothihais remind one of the chola days. The Griva which is next to the prasthara has many sculptures. The Sikhara and the Sthubi with the four sides are the craftsmanship of the present days. In the Athistana the sculpture has been chiseled facing the east. From the upana to the presthara the craftsmanship is made of hard stones. The griva the Sthubi and the sihana are relief structures and belong to the modern days. Its sannithi is understood to belong to the days after the rule of the Nayaks.

4.6 Sri Subramania Sannithi

In this temple campus the Subramaniam Sannithi is on the north western direction in the sitting posture facing to the east. It bears many architectural artifacts about it. When one examines it on the basis of the features of the art it is known that it is of earlier days. Though the Upana is seen in a concealed manner it bears many important features. In the Athishtana thiripattai has been shown. Next to the padma a slightly taller "Jahadi has been carved reminds one of style of Viswanatha temple. The Thiripatta Kumuda has been constructed in a small size. These are the general architectural features that are found in the Chola temples found here. This can also be found in the temple of the Pandyas days. This part consists of the 'Kala' the Pattihai and the kanda. In accordance to the Vimana the Athistana is at a height of nearly 4 feet.

In the feet portion the Deva koshta and many half –pillars have been shown each for a side. Though in the foot portion all the organs pertaining to it are shown the archways appear with no decoration. Though the prasthara appears as in the temples already mentioned the nests are simple and slightly grown ones. On the corner portion of the prasthara the simple craftsmanship of the Kodikarukku has been shown.

5. CONCLUSION

This paper identifies the architectural craftsmanship of Sri Vinayka Temple at Udumalpet in Tripur District. The author has tried to explore every part of this temple belongs to artistic excellence.

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A Comparative Study Of Non-Performing Assets In Public And Personal Sector Banks

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1 st	Nishi Aggarwal	Assistant Professor Department of Management Studies Jagannath International Management School Kalkaji ,New Delhi
2 nd	Poonam Malik	Assistant Professor Department of Computer Science Jagannath International Management School Vasant Kunj ,New Delhi

Abstract

The scope of the study is prescribed to the analysis of NPAs of the general public sector banks and personal sector banks NPAs relating solely weaker sections. It examines trend of NPAs in weaker sections in each public sector and personal sector banks. The study ascertained that the general public sector banks have achieved a bigger penetration compared to the personal sector banks .Non-performing assets area unit one amongst the key considerations for banks in Asian nation. NPAs mirror the performance of banks. A high level of NPAs suggests high likelihood of an oversized range of credit defaults that have an effect on the profitability and net-worth of banks and additionally erodes the worth of the plus. NPAs have an effect on the liquidity and profitability, additionally to motility threat on quality of plus and survival of banks. The Indian banking sector has been facing serious issues of raising Non- activity Assets (NPAs). The NPAs growth incorporates a direct impact on profitability of banks. It involves the requirement of provisions that reduces the profits and shareholders' price. The matter of NPAs is not solely moving the banks however additionally the full economy. Of course high level of NPAs in Indian banks is nothing however a mirrored image of the state of health of the business and trade. It is necessary to trim NPAs to enhance the monetary health within the industry. The Indian banking sector is facing a significant drawback of NPAs. An endeavour is formed during this paper that the factors contributory to NPAs, reasons for top NPAs and their impact on Indian banking operations, the trend and magnitude of NPAs in elect Indian banks.

1. INTRODUCTION

The banking industry in Asian nation includes business and cooperative banks, of that the previous accounts for over ninety per cent of banking system's assets. Besides some foreign and Indian non-public banks, the business banks comprise nationalized banks (majority equity holding is with the Government), the banking concern of Asian nation (SBI) (majority equity holding being with the banking company of India) and therefore the associate banks of SBI (majority holding being with banking concern of India). These banks, together with regional rural banks, represent the general public sector (state owned) banking industry in Asian nation. While the first perform of banks is to lend funds as loans to varied sectors appreciate agriculture, industry, personal loans, housing loans etc., however in recent times the banks became terribly cautious in extending loans. The explanation being mounting for nonperforming assets (NPAs) and these days these square measure the key considerations for banks in Asian nation.

NPA (non-performing assets) is said to banking and finance term. Once bank or no depository financial institution is unable to recover its Lent cash from recipient in ninety days than that quantity that have not been recovered are treated as foreign terrorist organization. It represents unhealthy loans, the borrowers of that did not satisfy their reimbursement obligations.

With result from March thirty one, 2004, a non-performing plus (NPA) shall be a loan or associate advance where;

- Interest and/ or installment of principal stay delinquent for a amount of over ninety days in respect of a term loan,
- The account remains 'out of order' for a amount of over ninety days, in respect of associate Overdraft/Cash Credit (OD/CC),
- The bill remains delinquent for an amount of over ninety days within the case of bills purchased and discounted
- Interest associated/or installment of principal remains delinquent 2[for 2} harvest seasons except for a amount not extraordinary two 0.5 years within the case of an advance granted for agricultural functions, and w.e.f 30.09.2004 following additional amendments were issued by the Apex Bank,
- A loan granted for brief period crops are treated as foreign terrorist organization if the installment of principal or interest on it remains delinquent for 2 crop seasons.
- A loan granted for long period crops are treated as foreign terrorist organization if the installment of principal or interest on it remains delinquent for one crop season.

If any advance or credit facilities granted by banks to a receiver become nonperforming, then the bank can ought to treat all the advances/credit facilities granted to it receiver as non-performing while not having any relevance the actual fact that there should still exist bound advances / credit facilities having playacting standing. As per the prudent norms steered by the depository financial institution of Asian nation (RBI), a bank cannot book interest on associate terrorist group on accounting. In alternative words such interests is engaged only it's been really received.

Narasimhan Committee that mandated identification and reduction of terrorist groups to be treated as a national priority as a result of NPA direct toward credit risk that bank faces and its potency in allocating resources. Profit and earnings of banks are affected thanks to terrorist group numbers.

If we tend to look on the numbers of non-performing assets we tend to could return to grasp that within the year 1995 the NPAs were Rs. 38385 large integer and reached to 71047 large integer in 2011 publicly sector banks and relatively within the year 2001 the NPAs were Rs. 6410 large integer and reached to Rs. 17972 large integer in 2011 privately sector banks.

1.1 Asset Classification Classes Of NPAS

i) Commonplace assets

Standard assets are those within which the bank is receiving interest still because the principal quantity of the loan frequently from the client. Here it is additionally important that during this case the arrears of interest and also the principal quantity of loan do not exceed ninety days at the top of monetary year. If quality fails to be in class of normal quality that is quantity due over ninety days then it is terrorist group and NPAs are any have to be compelled to classify in sub classes. Banks are needed to classify non-performing quality's any into the subsequent 3 classes supported the amount that the asset has remained non-performing and also the liableness of the dues.

ii) Sub-standard assets

With result from thirty one March 2005, a substandard quality would be one, that has remained terrorist group for a amount not up to or adequate to twelve month.

iii) Uncertain assets A loan classified as uncertain if it remained within the sub-standard class for twelve months.

iv) Loss assets A loss quality is one that thought-about bad and of such very little price that its continuance as a bankable quality is not warranted- though there is also some salvage or recovery price. Also, these assets would are known as „loss assets“ by the bank or internal or external auditors or the run scrutiny however the number would not are written-off completely.

1.2 Factors for rise in NPAs

The banking sector has been facing the intense issues of the rising NPAs. However the matter of NPAs is additional publicly sector banks in comparison to personal sector banks and foreign banks. The NPAs are growing because of external furthermore as internal factors.

1.2.1 External factors

a. Ineffective recovery - The govt. has established numbers of recovery tribunals that works for recovery of loans and advances. Because of their negligence and ineffectuality in their work the bank suffers the consequence of non-recover, thereby reducing their gain and liquidity.

b. Willful defaults - There are borrowers WHO are able to pay back loans however are on purpose retreating it. These teams of individuals ought to be known and correct measures ought to be taken so as to induce back the money extended to them as advances and loans.

c. Natural calamities - this can be the most important issue, that is making minacious rise in NPAs of the PSBs. each currently and so India is hit by major natural calamities so creating the borrowers unable to pay back there loans. so the bank needs to build great amount of provisions so as to compensate those loans, thence find yourself the financial with a reduced profit.

d. Industrial illness - Improper project handling, ineffective management, lack of adequate resources , lack of advance technology , day to day dynamical govt. Policies provide birth to industrial illness. Thence the banks that finance those industries ultimately find yourself with an occasional recovery of their loans reducing their profit and liquidity.

e. Lack of demand - Entrepreneurs in India could not foresee their product demand and starts production that ultimately piles up their product so creating them unable to pay back the money they borrow to work these activities. The banks recover the number by commercialism of their assets that covers a minimum label so the banks record the non-recovered half as NPAs and needs to build provision for it.

f. modification on govt. Policies - With each new govt. banking sector gets new policies for its operation so it is to touch upon the dynamical principles and policies for the regulation of the rising of NPAs.

g. Directed loans system - underneath this industrial banks area unit needed to produce four-hundredth share of their credit to priority sectors most important sources of NPAs are directed loans provided to the —micro sector area unit problematic of recoveries particularly once a number of its units become sick or weak.

1.2.2 Internal factors

a. Defective disposition method - There are a unit 3 cardinal principles of bank disposition that are followed by the industrial banks since long.

- i.) Principle of safety
- ii.) Principle of liquidity
- iii.) Principle of gain.

b. Inappropriate technology - because of inappropriate technology and management system, market driven choices on real time basis can't be taken. Correct MIS and monetary register is not enforced within the banks that result in poor credit assortment, thus NPAs. All the branches of the bank ought to be computerized.

c. Improper SWOT analysis - The improper strength, weakness, and chance and threat analysis is one more reason for rise in NPAs. Whereas providing unsecured advances the banks rely a lot of on the honesty, integrity, and monetary soundness and credit good of the receiver.

d. Poor credit appraisal system - Poor credit appraisal is another issue for the increase in NPAs. Because of poor credit appraisal the bank offer advances to those that do not

seem to be ready to repay it back. They must use sensible credit appraisal to decrease the NPAs.

e. social control deficiencies -The banker must always choose the receiver terribly rigorously and will take tangible assets as security to safe guard its interests. Once acceptive securities banks ought to take into account the:

- i) Marketability
- ii).Acceptableness
- iii) Safety
- iv) Interchangeability

The banker ought to follow the principle of diversification of risk supported the illustrious maxim do not keep all the eggs in one basket, it implies that the banker should not grant advances to many massive farms solely or to concentrate them in few industries or during a few cities. If a brand new massive client meets misfortune or bound traders or industries affected adversely, the position of the bank would not be affected.

1.2.3 Causes for NPA

The factors attributed for the cause of NPA can be:

Improper choice of borrower's activities, Weak credit appraisal system Industrial drawback, unskillfulness in management of recipient, slack in credit management & watching, Lack of correct follow up by bank, Recession in the market, Due to natural calamities and different uncertainties .

1.3 Impact of NPA's on banking operations

The efficiency of a bank is not reflected only by the size of its balance sheet but also by the level of return on its assets. The NPAs do not generate interest income for banks. At the same time, banks are required to provide provisions for NPAs from their current profits. The NPAs have deleterious impact on the return on assets in the following ways:

- i.) The interest income of banks will fall and it is to be accounted only on receipt basis.
- ii.) Banks profitability is affected adversely because of the providing of doubtful debts and consequent to writing it off as bad debts.
- iii.) Return on investments (ROI) is reduced.
- iv.) The capital adequacy ratio is disturbed as NPAs enter into its calculation.
- v.) The cost of capital will go up.
- vi.) Asset and liability mismatch will widen.
- vii.) It limits recycling of the funds

Banks could incline towards additional unhazardous investments to avoid and cut back peril that is not tributary for the expansion of economy. If the amount of NPAs is not controlled timely they will:

- Cut back the earning capability of assets and badly have an effect on the ROI.
- The value of capital can go up.
- The assets and liability couple can widen.

- Higher provisioning demand on mounting NPAs adversely has an effect on capital adequacy quantitative relation and banks profitability.
- The measure an addition (EVA) by banks gets upset as a result of EVA is up to information superhighway operative profit minus value of capital.
- NPAs causes to decrease the worth of share typically even below their value within the capital market.
- NPAs have an effect on the chance facing ability of banks.

1.4 Cost of Nonperforming assets

Non-Performing Assets have an effect on the profit, liquidity and competitive functioning of banks and organic process money establishments and eventually the scientific discipline of the bankers in respect of their disposition towards credit delivery and credit enlargement. Non-Performing assets cause high value for the bank, as these assets do not improve any of the following:

- Profits
- Capital adequacy
- Reduction of other costs
- Capital market perception

2. OBJECTIVES OF THE STUDY

The study aims to gain insights into the position of Non-Performing Assets of all commercial banks categories in public sector, private sector, scheduled commercial banks and foreign banks. The following broad objectives are laid down for the purpose of the study:

- I. To study NPA trend in last 7 years of private and public sector banks.
- II. To make a comparative study of NPA's of public sector and private sector banks.
- III. Assess the comparative position of NPAS in nationalized banks

3. RESEARCH METHODOLOGY

Research style went to do this study is descriptive analysis as a result of it deals with applied mathematics information and also the main aim of the report is to explain the factors moving the matter mentioned and creating comparison between banks performance in context of terrorist organization. This study is Associate in nursing analytical study. For the aim of this project non likelihood convenience technique of sampling is employed. The banks for the aim of study area unit chosen as per convenience solely. The sample consists of 3 Public sector banks - bank of Asian nation, Corporation Bank, Bank of Baroda and 3 non-public sector Banks - ICICI Bank Ltd, Axis Bank Ltd, HDFC Bank . The study is completed on the idea {of information of knowledge of information} for the amount of seven years from the fiscal year 2009-2015 and secondary data is collected in the main from the sources offered at web just like the run web site, websites of the banks etc. information is bestowed with the assistance of tables etc.

Table 1: Gross and Net NPA of Public Sector Banks

Year	SBI				PNB				Bank of Baroda			
	GNPA	%GNPA	NNPA	%NNPA	GNPA	%GNPA	NNPA	%NNPA	GNPA	%GNPA	NNPA	%NNPA
2009	16346	3.01	9,552	1.76	2965.33	1.55	1552.59	1.09	1842.92	1.2	602.32	0.34
2010	19535	3.09	10,870	1.72	3356.24	1.68	1678.52	1.12	2400.69	1.25	652.26	0.38
2011	25,326	3.28	12,346	1.63	4,379.39	1.79	2,038.63	1.23	3,152.50	1.36	790.88	0.35
2012	39,676	4.44	15,818	1.82	8,719.62	2.93	4,454.23	1.52	4,464.75	1.53	1,543.64	0.54
2013	51,189	4.75	21,956	2.1	13,465.79	4.27	7,236.50	2.35	7,982.58	2.4	4,192.02	1.28
2014	61,605	4.95	31,096	1.82	18,880.06	5.25	9,916.99	2.85	11,875.90	2.94	6034.76	1.52
2015	56,725	4.75	27,590	2.10	25,694.86	6.55	15,396.5	4.06	16,261.45	3.72	8069.49	1.89
Avg.	38628.8	4.03	18461	1.85	11065.89	3.43	6039.13	2.03	6854.39	2.05	3126.48	0.9

Table 2: Gross and Net NPA of Private Sector Banks

Year	ICICI				HDFC				AXIS			
	GNPA	%GNPA	NNPA	%NNPA	GNPA	%GNPA	NNPA	%NNPA	GNPA	%GNPA	NNPA	%NNPA
2009	96,49	3.96	45,53	2.09	1988	1.12	627	0.63	897	1.15	327	0.4
2010	94,80	4.36	38,41	2.12	1,816	1.09	392	0.31	1318	0.98	419	0.4
2011	10,034	4.47	2,407	1.11	1,694	1.05	296	0.2	159	1.01	41	0.26
2012	9,475	3.62	1,860	0.73	1,999	1.02	352	0.2	1,806	0.94	472	0.25
2013	9,607	3.22	2,230	0.77	2,334	0.97	468	0.2	2,393	1.06	704	0.32
2014	10,505	2.56	3297.9	0.82	15,173	3.76	4,222.2	1.06	3,146.41	0.98	1,024.62	0.40
2015	15,094	3.29	6255.5	1.40	3438.4	0.9	896.3	0.3	4,110.19	1.34	1,316.71	0.44
Avg.	7816.42	3.64	2292.91	1.29	4063.2	1.41	1036.21	0.41	1975.65	1.06	614.90	0.35

Table 3: Gross and net NPA of public and private sector banks

Year	Public Sector Banks				Private Sector Banks			
	GNPA	%GNPA	NNPA	%NNPA	GNPA	%GNPA	NNPA	%NNPA
2009	21154.25	5.76	11,707	3	2885	6.23	954	3.12
2010	25,292	6	13,201	3	3,134	6	811	3
2011	32,857.89	6.43	15,175.51	3.21	11,887	6.53	2,744	1.57
2012	52,860.37	8.9	21,816.87	3.88	13,280	5.58	2,684	1.18
2013	72,637.37	11.42	33,385.52	5.73	14,334	5.25	3,402	1.29
2014	92,361	13.14	47,048	6.19	28,824	7.3	8544.72	2.28
2015	98,681	15.02	51,056	8.05	22,643	5.53	8468.51	2.14

4. ANALYSIS OF KNOWLEDGE

In the information analysis some abbreviations are used. The total variety of these abbreviations is as follows:

- a. GNPA- Gross terrorist organization ,

- b. %GNPA- proportion of Gross terrorist organization to Gross advances
 - c. NNPA – internet terrorist organization
 - d. %NNPA- proportion of internet terrorist organization to internet advances
- The average GNPA and NNPA of SBI is highest among all 3 banks. The kids GNPA and %NNPA is additionally highest in SBI and lowest In Bank of Baroda. The typical GNPA and NNPA of ICICI are highest among all 3 banks. The kids GNPA and %NNPA is additionally highest in ICICI and lowest in HDFC. The trend on GNPA is sort of perpetually high in ICICI.
- The average GNPA and NNPA of ICICI is highest among all 3 banks. The kids GNPA and %NNPA is additionally highest in ICICI and lowest in HDFC. The trend on GNPA is sort of perpetually high in ICICI. The level of GNPA in HDFC is sort of same in seven years. And just in case of Axis bank it is highest in 2015 and lowest in 2011.
- The level of Gross terrorist organization publicly Banks is relatively terribly high than non-public banks. The trend is increasing publicly banks for all 7 years however in camera banks it is increasing until 2011 however at the moment it is nearly constant.
- The level of internet terrorist organization publicly Banks is additionally relatively terribly high than in camera banks. The trend is increasing publicly banks for all 7 years however in camera banks it is increasing until 2011 however at the moment it is nearly constant.

5. LIMITATIONS OF STUDY

Every study has sure limitations. Same is true with this study additionally. A number of the constraints round-faced throughout this study are:

- I. For the aim of this study solely information of seven years has been taken that is from twelvemonth 2009 to 2015.
- II. The info would be collected from solely half-dozen banks that is three non-public sector banks and three public sector banks.
- III. The study covers just one side that is comparison of trend and quantity of NPA in several public and personal banks.
- IV. Convenience technique of sampling has been used therefore all the units within the universe (all public and personal banks) did not have the equal possibilities of choice.

6. FINDINGS

It is found on the premise of study of information that the plus quality of public sector banks and personal sector banks improved systematically within the past few years as mirrored within the decline within the magnitude relation i.e. NPAs as proportion of advances to weaker sections from eighteen.9% to three percent just in case of public sector banks and from twelve.15percent to 0.5 percent. Over the amount of study, it has been registered that the general public sector banks have achieved a larger penetration compared to the personal sector banks vis-à-vis the weaker sections. The results from higher than analysis show that there's robust proof that the statistics within the advances to the weaker section of recent personal sector minute.

7. CONCLUSION

The NPAs have perpetually created a giant drawback for the banks in Asian nation. It is simply not solely drawback for the banks except for the economy too. The money fastened up in NPAs features a direct impact on profitableness of the bank as Indian banks area unit extremely smitten by financial gain from interest on funds lend. This study shows that extent of NPA is relatively terribly high publically sectors banks as compared to non-public banks. though numerous steps are taken by government to cut back the NPAs however still loads has to be done to curb this drawback. The NPAs level of our banks continues to be high as compared to the foreign banks. It is not in any respect potential to own zero NPAs. The bank management ought to speed up the recovery method. {The drawback the matter} of recovery is not with little borrowers however with massive borrowers and a strict policy ought to be followed for finding this problem. The govt. ought to additionally build additional provisions for quicker settlement of unfinished cases and additionally it ought to cut back the obligatory loaning to priority sector as this can be the main drawback making space. That the drawback of NPA wants several serious efforts otherwise NPAs can keep killing the profitableness of banks that is not sensible for the growing Indian economy in any respect.

NPAs did rise 23% between 2013-'14 and 2014-'15, threatening India's banking system, but it is also true that in the year since Narendra Modi's government took charge, there has been a 100% increase in bank fraud (as per RBI data).

Non – Performing Assets in Indian's Banking System

Years	In Rs. crore
2012-2013	183,854
2013-2014	251,060
2014-2015	309,409

Over the year since Modi's government took office, the amount involved in bank fraud rose from Rs 10,170 crore in the fiscal year 2013-'14 to Rs 19,361 crore in 2014-'15, i.e. nearly 100%.

Source: Right To Information Query With Reserve Bank of India

Fraud Reported By Banks Where Amount Involved Is More than Rs One Lakh

Years	In Rs. crore
2012-2013	8,649
2013-2014	10,170
2014-2015	19,361

The fraud ranged from cheques alteration to fake loans, debit/credit card fraud to cyber fraud.

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9. AUTHOR'S BIOGRAPHY



Ms. Nishi Aggarwal is Assistant Professor in Department of Management in Jagannath International Management School, Kalkaji, New Delhi. She has done M.A. in Mathematics from Delhi University and PGDM from AIMA with specialization in Finance. She has a teaching experience of more than eight years. Her areas of interests are Mathematics, Statistics, Operations Research, Economics and Finance.



Ms. Poonam Malik is Assistant Professor in Department of Computer Science in Jagannath International Management School, Vasant Kunj ,New Delhi. She is currently pursuing Ph.D. in Computer Science from Jagannath University , Jaipur, completed her MCA from Swami Devi Dyal Engineering College, Kurukshetra University and graduation from Punjab University; Chandigarh. She has a teaching experience of more than nine years. Her areas of interest includes Computer Networks, Operating System, Database Management System, Software engineering, Digital Electronics, Java, and Web Technologies

A Review On Natural Fiber Polymeric Composites

Paper ID	IJIFR/V3/ E10/ 013	Page No.	3646-3653	Subject Area	Mechanical Engineering
Key Words	Gross NPA, Net NPA, Public banks and personal Sector Banks				

1st	V Vijaya Bhaskar	Associate professor, Department of Mechanical Engineering, Sri Vasavi Institute of Engg. & Technology, Krishna Dist., Andhra Pradesh- India
2nd	Dr. Kolla Srinivas	Professor, Department of Mechanical Engineering, RVR&JC College of Engineering, Guntur, Andhra Pradesh-India

Abstract

From the past thirty five years, polymer composite materials have been analyzing for many engineering as well as industrial applications. These composites occupy a better portion of the engineered materials market ranging from everyday used products to sophisticated niche components. Applications of polymers are becoming vast with the reinforcement of natural fibers as this combination improving the quality of composite to a great extent in terms of strength and other aspects. While composites have already proven their worth as well as weight-saving material, the current challenge is to make them cost-effective. This review paper presents about the polymers, natural fibers which have been predominantly using in recent times to meet present requirements, in detail. Also, this paper discusses about the few new findings from recent inventions.

1. INTRODUCTION TO COMPOSITES

1.1. Need of composite

Concrete, steel, and wood are the most important components in the development of infrastructure. However, costs of construction have been increasing very significantly in recent years above the expectations [1]. In this context, synthetic, petroleum-based fiber reinforced polymer (FRP) composites have been found as best alternatives to conventional

construction materials as they exhibit Higher strength and stiffness with reference to specific gravity; higher fatigue strength and impact energy absorption capacity; better resistance to corrosion, fire, acids, and natural hazardous environments; longer service life and lower life-cycle costs; better insulation and less toxicity as primary components for construction [1].

1.2 Merits of FRP composites:

Some merits of composite materials over conventional materials

- The expanded use of natural FRP composites composed of natural fibers and/or biopolymers would provide long term benefits to infrastructure.
- Natural FRPs have the potential to eventually be lighter-weight and lower-cost than conventional materials and many synthetic composites.
- Natural fibers are easier to handle and have good thermal and acoustic insulation properties [2].
- Using materials like natural composites that reduce construction waste and increase energy efficiency would provide a solution to immediate infrastructure needs while promoting the concept of sustainability [3]

2. POLYMERS

2.1 Introduction:

Polymer can be defined as a long molecular structure made of many units where the basic units are made of carbon, hydrogen, and oxygen. Polymers are produced from raw materials such as petroleum, natural gas and derivatives of fossil fuel.

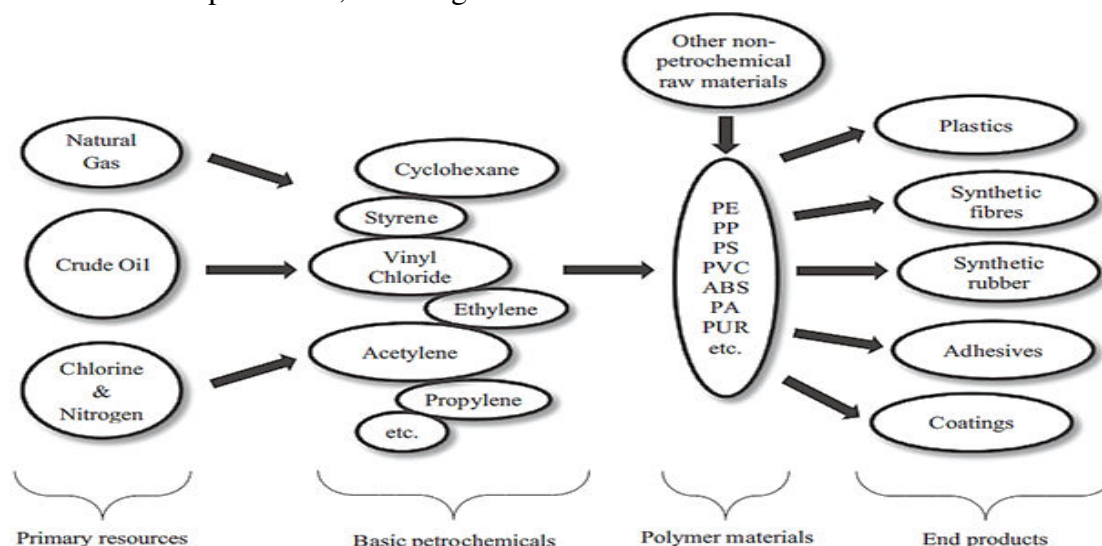


Figure 1: Sequence of polymer based production from raw petroleum products

Generally, petrochemicals for polymer synthesis are produced on large scale from an important substance known as naphtha. Naphtha is one of the main derivatives of fossil Fuel. From naphtha, other olefins are produced such as ethylene, propylene, benzene and toluene. Ethane is a component of natural gas that produces ethylene. Once the polymer materials are synthesized, they are channelled to major consuming industries such as,

Textiles and paints, or to highly diverse processing sectors producing commercial products in construction, packaging, automobile, agriculture, furniture, electrical and general engineering [4]. Fig.1 illustrates the sequence of polymer based products production from raw materials [5].

2.2 Types of polymers:

There are three types of polymers based on the variation in the chemical molecular arrangement namely thermosetting plastics, Thermoplastics and Elastomers. Thermosetting polymers are stronger and stiffer than thermoplastics and they, generally, can be used at higher temperature. They are shaped directly from the raw polymer material and no further processing is required except machining. Thermosetting polymers are limited to molding only. In molding process, chemicals are added to enhance the cross linking while the material is still in the mould. Thermo sets have high thermal stability, high dimensional stability and stiffness, good resistance to creep, low densities and high electrical and thermal insulating properties. Thermoplastic polymers however are materials that become soften when heated and harden when cooled. The properties of the thermoplastic polymers can be altered by changing the length and the form of its individual chains. Elastomers on the other hand have excellent elastic properties. They are capable of returning to their original shape when a force, not exceeding its yield strength, is removed. Thus, due to the advantages of polymers as compared to steel and aluminium, they are often used by the aircraft, construction, electrical, marine and transportation industries [6].

2.3. Biopolymers:

These are produced from renewable agricultural raw materials but not derived from fossil fuels. At present, two biopolymers or Natural thermoplastic resins are having some market exposure namely polylactic acid (PLA) and soy-based resins such as soy-protein concentrates (SPCs) and soy-protein isolates (SPIs). These biopolymers are made from agricultural raw materials such as dextrose or starch, fermented to form lactic acids and then polymerized [7, 8]. The various types of polymers and their corresponding applications [9-20] are shown in Table 1.

Table1: Types of polymers and their main applications

Polymers	Applications
Thermosets	
Polyester	Bearing applications
Epoxides	Boat hulls
Polyurethanes	Refrigerators
Phenolics	Gears/bearings/electric insulators
Polymides	Airplane body/circuit board
Thermoplastics	
Acrylics	Name tags/lenses for car lights
Polyethylene	Wires, cables or insulators
Polypropylene	Piping/floor lines
Polyvinylchloride	Cups/packaging/vending machines
Polystyrene	

Elastomers

Natural rubber	Hoses/belts/mats/gloves
Silicon rubber	O rings/adhesive bonds
Polybutadiene	Automobile tires
Epichlorohydrine	Explosives/water purification
Polyether block amide	Vibration absorbers/shoes/insulators

3. NATURAL FIBERS

Natural fiber can be defined as a hair like structure which is obtained naturally i.e from environment and not a man and natural fiber has high aspect ratio (length to diameter ratio). The structure of a natural fiber consists of a primary cell wall and three secondary cell walls as shown in **fig.2**. The cell walls are made up of a lignin–hemicellulose matrix and microfibrils, which are oriented in different directions in each cell wall. The microfibrils each have a diameter of the order of about 10 nm, and are made up of around 30–100 cellulose molecules [21]. The microfibrillar angle, or the average angle at which the microfibrils are oriented off of the axis of the filament, is thought to be responsible for a number of mechanical properties of the fiber, as smaller angles generally lead to higher strength and stiffness and larger angles to better ductility [21]. Filaments are bonded into a bundle by lignin and then attached to the stem by pectin. The lignin and the pectin are both weaker polymers than the cellulose, so they must be removed if the fibers are going to be effective as composite reinforcements. Most of the pectin is removed when the bundles are separated from the rest of the stem by retting (soaking) and scotching (beating).

The three main chemical components of a natural fiber are cellulose, hemicellulose, and lignin. The hemicellulose forms crosslinking molecules with the cellulose, forming the main structural component of the cell. The lignin provides additional strength and coupling on the hemicellulose–cellulose network and in some cases acts as a protective barrier

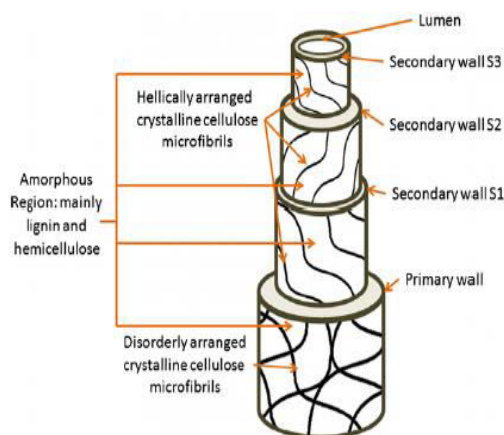


Figure 2: Basic Structure of Natural Fiber

Types of plant and fibre groups

Wood fibre	Stalk fibre	Fruit fibre	Seed fibre	Leaf fibre	Bast fibre
Hardwood	Bamboo	Coconut	Cotton	Sisal	Rattan
Softwood	Wheat	Betelnut	Oil palm seed	Manila	Hemp
Sawdust	Rice		Kapok	Banana	Jute
	Grass		Alfalfa	Palm	Ramie
	Barley			Mengkuan	Banana
	Corn			Date palm	Flax
				Pineapple	Sugarcane
				Abaca	Kenaf
					Roselle

Figure 3: Natural fibers from plants

3.1. Classification of Natural Fibers:

Natural fibers can be classified into three categories: vegetable fibers which are harvested from parts of plants, animal fibers (animal hair, silk fiber from worms etc.) and mineral fibers (asbestos fiber, ceramic fiber, basalt (rock) fiber and metal fiber (aluminium fiber). Fig.3. gives typical examples of vegetable or plant or lignocellulose fibers. Table 2 collects the chemical composition of few natural fibers [22].

Table 2: Average Chemical Compositions of Selected Natural Fibers

Type of fiber	Cellulose (%)	Hemicelluloses (%)	Lignin (%)	Pectin (%)	Wax (%)	Ash (%)	Moisture (%)
Cotton	82.7	5.7	28.2	5.7	0.6	ND	10.0
Jute	64.4	12	0.2	11.8	0.5	0.5-2.1	10.0
Flax	64.1	16.7	2.0	1.8	1.5	13.1	10
Sisal	65.8	12	9.9	0.8	0.3	ND	10.0
Bamboo	48.2-73.8	12.5-73.3	10.2-21.4	0.37	ND	2.3	11.7
Hemp	55.-80.2	12-22.4	2.6-13	0.9-3.0	0.2	0.5-0.8	6.5
Kenaf	37-49	18-24	7-9	0.3	0.1	3.2	ND
Oil palm	42.7-65	17.1-33.5	13.2-25.3	ND	0.6	1.3-6.0	ND
Betelnut	35-64.8	29-33.1	13-26	9.2-15.4	0.5-0.7	1.1-2.1	ND
Sugarcane	28.3-55	20.3-36.3	21.2-24	ND	0.9	1-4	ND
Coir	19.9-36.7	11.9-15.4	32.7-53.3	4.7-7.0	ND	ND	0.2-0.5
Banana	48-60	102-15.9	14.4-21.6	2.1-4.1	3-5	2.1	2-3
Pineapple	57.5-74.3	80.7	4.4-10.1	1.1	3.3	0.9-4.7	ND
Ramie	68.6	13.1	0.6	1.9	0.3	ND	10.0

Remarks: ND- Not Determined

4. COMPOSITES OF POLYMERS AND NATURAL FIBERS:

4.1. Types of composites:

The natural fibers can be combined or reinforced with the polymers in many ways as follows: particle reinforced, flakes reinforced, fillers reinforced, short fiber reinforced, long fiber reinforced, mat fiber reinforced, uni-directional fiber reinforced etc. further, in above all cases the orientation of the fiber and random or uniform distribution can be changed.

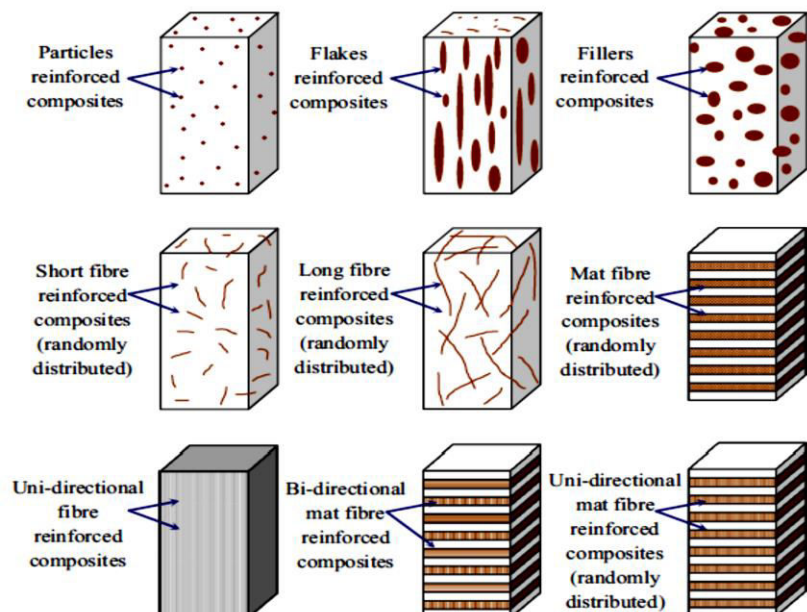


Figure 4: Types of reinforcements

4.2. Properties of Composites:

Most widely used matrix materials which glue the reinforced fibers include polyetheretherketone (PEEK), then Epoxy resins due to their higher adhesion and less shrinkage with all type of fibers [23]. From the table3, it can be seen that using appropriate natural fibers as reinforcement in polymeric composites with proper chemical treatments, can improve the mechanical properties as compared to neat polymers. However, the mechanical properties of natural fibers may differ in the cited works. This is due to the fact that the fibers were harvested from different geographic allocations resulting in different fiber properties such as moisture content, chemical compositions and cell dimensions.

Table 3: Mechanical Properties of Natural Fiber Composites.

Type Of Fiber	Density(g/cm ³)	Elongation(%)	Tensile Strength(Mpa)	Young's Modulus (Gpa)
Cotton	1.5-1.6	2.1-12	200-600	5.0-15.1
Jute	1.3-1.5	1.4-2.1	385-850	9-31
Flax	1.3-1.5	1.1-3.3	340-1600	25-81
Sisal	1.3-1.6	1.9-15	400-700	8.5-40
Bamboo	1.2-1.5	1.9-3.2	500-575	27-40
Hemp	1.1-1.6	0.8-3.0	285-1735	14.4-44
Kenaf	0.6-1.5	1.6-4.3	223-1191	11-60
Abaca	1.5	1.2-1.5	430-815	31.3-33.6
Oil palm	0.7-1.6	4-18	50-400	0.6-9.0
Betelnut	0.2-0.4	22-24	120-166	1.3-2.6
Sugarcane	1.1-1.6	6.3-7.9	170-350	5.1-6.2
Coir	1.2-1.6	14-30	170-230	3-7
Banana	0.5-1.5	2.4-3.5	711-789	4-32.7
Pineapple	1.56	2.4	150-1627	11-82
Ramie	1.4-1.5	1.5-4.0	200-1000	41-130
E-glass	2.3	2.5-3.0	2000-3500	70
S-glass	2.5	2.8	4570	86

5. CONCLUSIONS

This review paper has discussed the basics elements of natural FRPs in brief and chemical and physical properties of basic elements. Also, the mechanical properties of natural FRPs from the recent findings have listed. Natural FRPs have good potential in future applications in infrastructure and other fields. However, the main challenges associated with moisture absorption, fire resistance, mechanical properties and durability, and manufacturing/processing of natural FRPs are being addressed by many research efforts.

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The Use Of Recycled Aggregate From Demolished Material

Paper ID	IJIFR/V3/ E10/ 004	Page No.	3654-3659	Subject Area	Civil Engineering
Key Words	Gross NPA, Net NPA, Public banks and personal Sector Banks				

1 st	Pawar Sagar Balkrishna	B.E. Student Department of Civil Engineering, Nanasaheb Mahadik College of Engineering Sangli, Maharashtra
2 nd	Janugade Rushikesh Ashok	B.E. Student Department of Civil Engineering, Nanasaheb Mahadik College of Engineering Sangli, Maharashtra

Abstract

The possible solution to these problems is to recycle demolished concrete and produce an alternative aggregate for structural concrete. Recycled Concrete aggregates (RCA) as popularly known can be used as aggregates in concrete as partial or total replacement. Concrete made with such recycled concrete aggregate is called as Recycled aggregate concrete. However before moving further with this concept it is very important to elevate the status of recycle material through research, development and performance data for the material as compared to virgin or typical material. The paper focuses on fresh and hardened properties of Concrete designed by the aim of maximum utilization of Recycled aggregates. Use of Recycled aggregate, which has different properties, will also influence the properties of fresh concrete. Properties like Slump, workability will be studied which is also an important factor for gaining the strength of concrete.

1. INTRODUCTION

Demolition of old and deteriorated building and traffic infrastructure and their substitution with new ones, is a frequent phenomenon today in most of the part of world. The main reason for this situation are changes of purpose, structural deterioration, rearrangement of city, expansion of traffic directions and increase of traffic load, natural disasters like

earthquake, flood fire etc. As per Times of India, Dec 6, 2010 states that according to JNNURM report India generates 10-12 million tons of Concrete& Demolished waste annually. And 50% of it is Concrete and Masonry which is not recycled in India. The most common methods of disposing this material are land filling. In these way large amounts of construction waste is generated, consequently becoming a problem a special problem of human environment. For this similar reason in developing countries, laws have been bought into practice to restrict this waste in the form of prohibitions or special taxes existing for creating waste areas. To take care of the Concrete& Demolished waste in India Ministry of Environment and forests has mandated environmental clearance for all large construction projects.

1.1 Recycled Aggregate

Recycled aggregate is generally produced by two stages crushing of demolished concrete, screening and removal of contaminants such as reinforcement, wood, plastic etc. Concrete made with such aggregates is called as Recycled aggregate Concrete. RILEM Committee 121-DRG has published recommendations for the use of recycled aggregates, classifying them into three groups.

Group I-Aggregates mainly from masonry rubble

Group II- Aggregate obtained mainly from concrete rubble

Group III-A mixture of natural aggregates (>80%) and rubble from the other two groups (with up to 10% of group I).



Figure 1: Crushing Of demolished Concrete

1.2 Advantages and limitations of recycled aggregates

1.2.1 Advantages:

- Environmental gain: Reduction of use of natural aggregates and less amount of land filling.
- Save Energy: Energy can be saved by producing the aggregates on site itself. Mobile crushers can be used for the same.

- **Cost:** The cost of recycled aggregate can be low as compared to the natural as the raw material is also available in cheaper cost.
- **Sustainability:** The amount of waste materials used for land filling can be reduced which can now accolade for LED points.
- **Wide Market:** Market is very wide for recycled aggregate. It is extensively used in Spain, Brazil UK etc. And spreading widely.

1.2.2 Limitations:

- **Hard to have permit:** It is very difficult to get permit that needed air permit or permit to operate during recycling process. This will depend upon the local rules and regulations.
- **Lack of specification or guideline:** For use of recycled aggregates there is a clear lack of specification and thus lot of emphasis has to be given for research and extensive studies.
- **Properties of Recycled aggregate:** Some properties of recycled aggregates can be very discouraging like more amount of water absorption or more Fineness of Recycled fine aggregate which can affect the properties of Concrete like workability, Compressive strength etc. And thus similar for use in concrete.

2. PURPOSE OF THE STUDY

- I. By using IS 10262:2009 design M25 grade of concrete with an aim of maximum utilization of Recycled aggregates in Concrete with other materials. IS 10262:2009 emphasizes on designing trials for concrete which can increase the confidence level.
- II. Study the fresh and hardened properties of Concrete designed by the aim of maximum utilization of Recycled aggregates. Use of Recycled aggregate, which has different properties, will also influence the properties of fresh concrete. Properties like Slump, workability etc. will be studied which is also an important factor for gaining the strength of concrete. Compressive strength of concrete, split tensile strength flexural strength of concrete are important factors which asses the suitability of using the concrete for structural applications.

3. RESULTS

Table 1: Results for mix 1: Natural Fine Aggregate and Natural Coarse Aggregate

Sr. no	Slump	7 day		14 day		28 day		Avg. Density Kg/m ³
		Weight	N/mm ²	weight	N/mm ²	weight	N/mm ²	
1	85	8.74	23.84	8.76	26.26	8.79	34.77	2556.70
2	85	8.04	22.94	8.2	26.89	8.85	32.6	
3	80	8.78	22.42	8.79	25.45	8.80	32.73	
Mean	-	-	23.06	-	26.20	-	33.36	

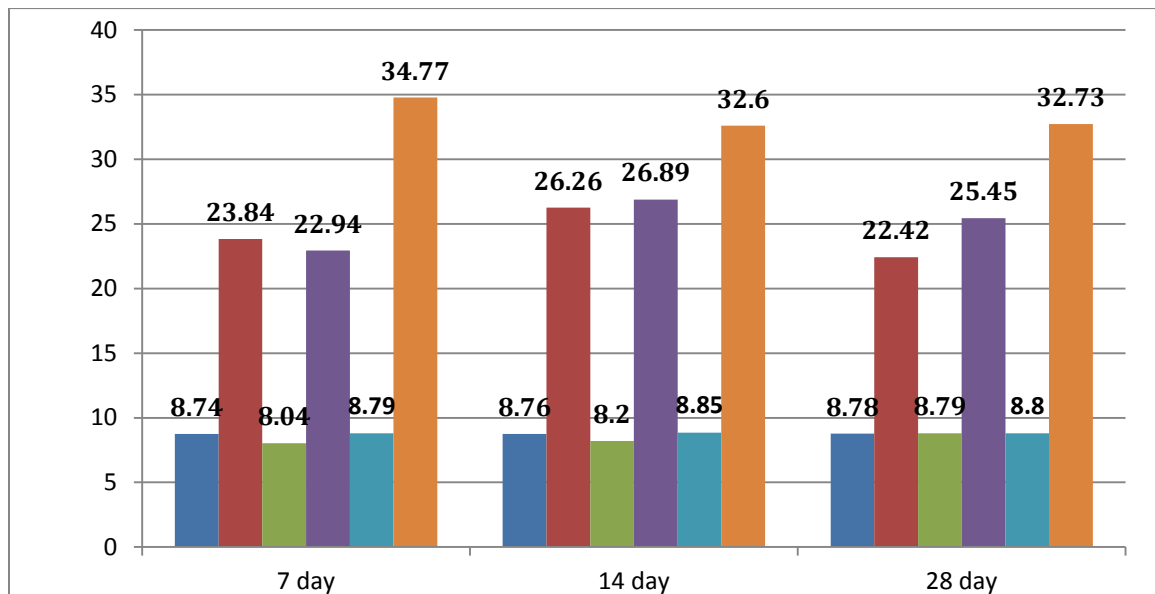


Figure 2: Graphical Representation of Table 1

Table 2: Results for Cement+ Conventional Fine Aggregate + Recycled coarse aggregate 40% (10mm and/or 20mm) +Admixture

Sr. no	Slump	7 day		14 day		28 day		Avg. Density Kg/m ³
		Weight	N/mm ²	weight	N/mm ²	weight	N/mm ²	
1	70	8.6	24.68	8.62	27.47	8.55	33.70	2547.81
2	70	8.64	24.54	8.67	27.50	8.9	34.50	
3	69	8.42	27.23	8.59	28.10	8.4	33.80	
Mean	-	-	25.48	-	27.69	-	34.00	

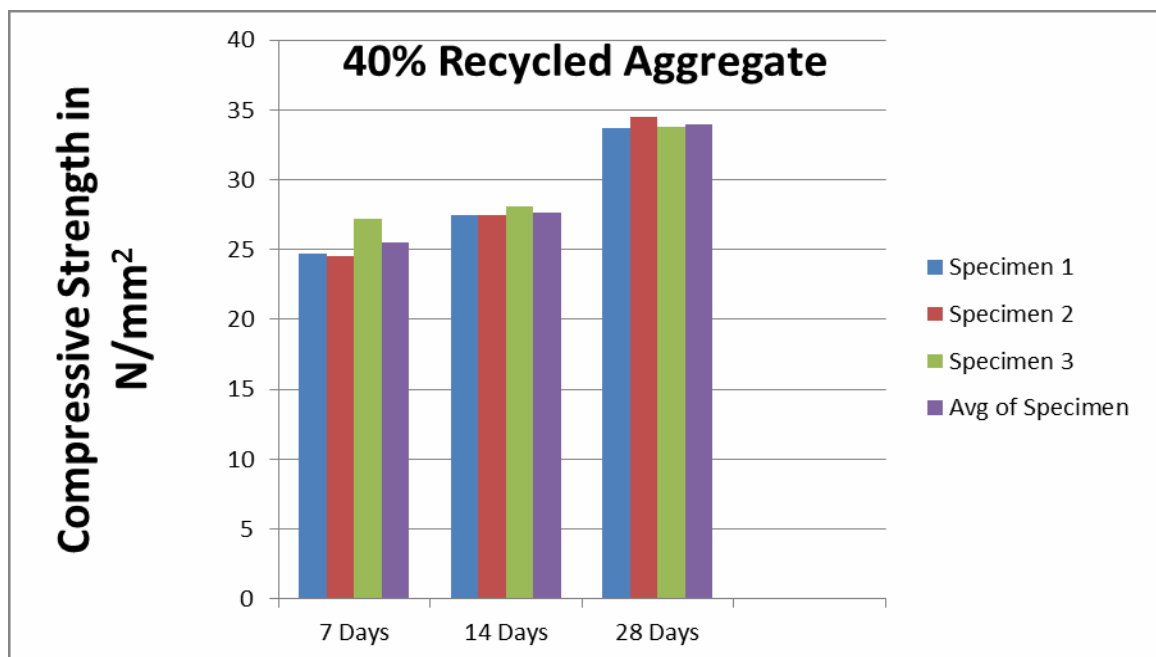


Figure 3: Graphical Representation of Table 2

4. COST ANALYSIS

Table 3: Total Cost required for obtaining the total aggregates

Sr. No.	Name of work	Workers (Nos.)	Days	Rate (Rs)	Total Amount
1	Demolishing the concrete cubes	1	5	250	1250
2	Sieving	2	3	250	1500
				Total cost =	Rs 2750

Cost of course aggregates = $0.36 \times 2750 = 2357$ rupees.

Cost of course aggregates for 1m^3 quantity = 6547 rupees per 1m^3

Table 4: Cost comparison between Conventional aggregate concrete and Recycled aggregate concrete

Material	Quantity (kg)	Quantity (m^3)
Cement	325	0.22
Course Aggregate	1004.23 kg/ lit	0.70

Rate Analysis:-

$$\text{Cement} = \frac{325}{50}$$

= 6.5 bags.

$$\text{Cost of cement} = 6.5 \times 300 = 1950 \text{ rupees}$$

$$\text{Cost of aggregates} = 0.70 \times 900$$

$$= 630$$

$$\text{rupees Cost of sand} = 0.38 \times 2300$$

$$= 874 \text{ rupees}$$

$$\text{Total cost of Conventional Aggregate Concrete} = 1950 + 630 + 874 = 3454 \text{ rupees}$$

$$\text{Total cost of Conventional Aggregate Concrete} = 3454 \text{ rupees.}$$

5. CONCLUSION

- I. The physical and Mechanical properties of Recycled Concrete aggregates are important factors governing the strength characteristics of the concrete. And the properties of Recycled Concrete Aggregates are governed by the Parent source.
- II. The experiments done on NFA, RFCA, NA-20mm & 10mm, RCA-20mm, 10mm showed large values of water absorption and moisture content for all the Recycled aggregates and more for RFA. The fact that the mortar adhered which is weak and more porous and thus absorbs more water is the main factor contributing towards decrease of compressive strength of concrete with RCA.

- III. The lower value of specific gravity of recycled aggregates is an indication that recycled concrete aggregates are lighter than that of natural aggregates. The main reason for this is existence of loose paste in the demolished wastes.

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Expectation Of Potential Management Education Aspirants Towards Management Education Institutions

Paper ID	IJIFR/V3/ E10/ 015	Page No.	3660-3670	Subject Area	Management Studies
KeyWords	Management Aspirant's, Student's Needs, Quality Management Education, Business Management Institutes, Competitiveness				

1 st	Dr. Ritika Sinha	Assistant Professor P.G. Department of Management Studies , Canara Bank School of Management Studies Bangalore University-Bengaluru
2 nd	Pallavi S	Research Scholar P.G. Department of Management Studies , Canara Bank School of Management Studies Bangalore University-Bengaluru

Abstract

Today's market demands are good and active managers for the development of country. Managers should know all the facts, logic and strategies. For this they should get education from good institutions. Today in India we have large numbers of management institutions but they are not producing the Managers who can meet the global competition. Low quality of education in higher levels is increasingly becoming a cause of concern. Though lots has been written about the factors required to increase the quality of our business management institutions, much research has not been done into the other aspects of business schools such as related to the course content, teaching learning process and the basic methodologies of lecture delivery and understanding of the student's needs and physical infrastructure. In particular by improving the quality in higher education, Indian business management schools may make themselves competitive in the long run. In this paper researcher has tried to study the mind-set of current management education aspirants. The samples of 100 students were obtained; Frequency analysis and percentage analysis methods are used for the analysis of data. This paper concludes with the result - Management institutes must try to develop their quality as good as premier institutes in India.

1. INTRODUCTION

Management Education in India has not grown in an evolutionary manner. American Experience was grafted on to an existing educational system and did not emerge from the native educational and business context and culture. Its development has been random and its objectives, content, pedagogy and other aspects need re-examination in relation to the needs of India, in an increasingly globalizing economy. Organizations are becoming more complex and businesses more competitive. The demands on the skills of Indian managers are changing. It has become essential to re-examine the entire structure, content, purpose and pattern of Management Education. Present corporate world is full of competition. New technologies are emerging every day and everything is turning towards globalization. In such challenging situation, young managers possessing management degree turn out to be survivors. The biggest challenge of the management institutes is to produce efficient managers. A management degree from a reputed institution certifies that the person holding the degree has enough managerial skills required to face the competition. Management courses develops skillful workforce which constitutes of leaders of future as well as competitive managers. They have the ability to handle complex business situations. They maintain healthy relationships with clients.

It is evident now that we need to improve the infrastructure and teaching methodologies, quality of teachers recruited to teach the teachers to completely overhaul the system. This will only help in providing better educational quality to students and at the same time attracts more students from home and abroad. This research paper tries to focus on the student's perspective of quality initiatives required in a business management institute which can make it competitive in the long run. Management education centric to Business activities- The aim of management education is to keep students abreast of information about leading business community and their strategies in business world and to provide them knowledge and education to increase their business competitiveness. Management education prepares students to work and create team-oriented atmosphere in an organization and train them to work in a global competitive environment of the 21st century. These all information is essential for the development of entrepreneurship skills and to be a successful entrepreneur in a competing environment. Academia-Industry interactions- Interaction with industrial personnel, experienced faculty members, experts in their relevant field, domain specialists are also frequently called to interact with the young aspirants to make them aware about the latest information and tactics in the market. Same also required in entrepreneurship education where experience of well-established entrepreneurs work as a motivating factors for the students. Such interactions give students a sense of direction for their vision. Holistic development of personality- Management programs laid emphasize on overall development of personality of student by inculcating high achievement motive, originality in thinking, foresightedness, risk bearing ability etc. that is also essential for entrepreneurial skills. It also tries to develop self- monitoring ability which is very much required to run a business.

2. REVIEW OF LITERATURE

- **Shubhendu S. Shukla (2013)** “ Aside from the top 20 business schools like the Indian Institutes of Management (IIMs), merely 10% of graduates from business schools manage to get hired by corporate India. In the last five years, the number of MBA seats annually in India has tripled from 4,500 to as many as 3.6 lakh, according to an ASSOCHAM study, but campus recruitments have gone down by 40% in the same period. Indian management institutes should internationalize their approach to equip students to become global managers. At the same time, Indian business schools should take care to ensure that their courses had enough local content so that students could relate to them easily. Change in study material and teaching methodology with time as it is said "Any corporate which does not change with time is bound to die, Experts opine that old curriculum and teaching methodologies in B-schools has not able to keep pace with fluid and dynamic environment.
- **Archana Krishnan (December, 2011)** “the study depicts the quality initiatives that are instrumental in improving the academic productivity of the students. For this the institutions must ensure good quality of time and money devoted to improving the quality of service delivered to its customers. A combination of specific conditions and resources are needed to create outstanding educational institutions. A successful quality management initiative in an Educational institution will increase its standard and market value.”
- **JayanthiRanjan and Saani Khalil (2007)** **KM approach will enable business schools to quickly respond to its goals and objectives and in some cases preempt staff and faculty demands and needs** To build and develop a robust and thriving knowledge environment in business schools, the institutions need to look beyond technology and develop the overall culture of accessing, sharing and managing knowledge. In this paper, a conceptual framework of how knowledge resources are shared by different entities in any business school is discussed and presented. The paper also demonstrated the successful implementation of new knowledge management system implemented at Test Institute of Management (TIM), India. Finally I would like to conclude that the real success of KM in Bschoools lies in helping the students grow into worthy human beings with courage to face the problems with an inner strength. Every institutional initiative requires time, money, energy and resources so that it may mature and suit to the business schools. Let us hope that in the coming years KM would prove a good step in the right direction of all Indian educational institutions.”
- **CM. Reddy (April 1992)** “management education in India, like Indian industry, is flourishing in a Government-subsidised sellers' market; it lacks the incentive to respond to the changing needs of the practising world. Though management education does add value to the management graduates, there is considerable scope for improvement. Lack of clarity regarding the expected outcome/goals of management education, discipline-orientation and ivory-tower approach of the academicians, lack of involvement by

practitioners in the industry and bias towards conceptual learning, are some of the factors hampering the effectiveness of the Indian management education.”

- **Debarshi Mukherjee (2014)** “In this paper researcher has find out the perception of students or learners and academicians and corporate or providers of management education towards a winning pedagogy from the myriad of traditional classroom and e-learning pedagogies suiting individual’s learning requirement resulting in higher learning gain. Traditional classroom teaching and Web-based instructional system (WBIS) of e-learning pedagogy have contributed to identify the variables of management education in this paper. From the observed variables, it was revealed that respondents preferred WBIS over traditional school of thought and another dimension of management education, that is, blended learning involving characteristics from the other two schools surfaced as the third factor. Primary data were collected through a structured questionnaire from academicians and students of management studies across various specializations in both government and private academic institutions and from corporate who are either responsible for training function or involved in the development process of e-learning programmes or someway connected to or aware of e-learning pedagogy across industries. The respondents, that is, teachers of management subjects, students of two-year full-time postgraduate management curriculum and people from industry were selected through random sampling researcher concludes that mixture of components drawn from both learning systems were required to realize the actual essence of management education resulting in higher learning gain”.

3. STATEMENT OF THE PROBLEM

Decreasing quality in higher educational institution is a cause of concern for all those concerned with the field of education. Educational institutions without proper academic support and infrastructure quality produce low quality of students who will not be able to contribute to the nation in the long run. The problem is more pronounced as the number of educational institutions is increasing every year. Thus this paper tries to focus on perception of students who are aspirants of management education (MBA and PGDBM) towards the selection of business management institution to pursuing their management degree.

4. OBJECTIVE

- To understand the mindset of management education aspirants.
- To study the expectation from management education institution by the students.

5. SCOPE OF THE STUDY

Bangalore is recognized as the IT capital of India. There are students from all over India pursuing their management education in Bangalore: hence the research study will be conducted in the area of Bangalore.

6. RESEARCH METHODOLOGY

By intent, this study will be a descriptive research that uses the survey method. Hence the study will be a fact-finding investigation with adequate interpretation. It will focus on certain aspects or dimensions of the identified problems. The study will be designed to gather descriptive information.

I. Sampling method

The sampling method adopted was simple random sampling. The population includes students of both graduate and post graduate level. Samples of 100 students were obtained.

II. Sources of data and data collection

- Data required for the research has collected from both primary and secondary sources.
- Primary data has collected by administering Interview Schedules/Questionnaire to the respondents
- Secondary data will also be collected from books relating to the topic, articles, reputed journals, the financial press, government publications, websites and company annual

III. Data analysis methods

Data has analysed using statistical techniques consistent with the objectives of the study. Frequency analysis and graphical representation are used for analyzing the data.

7. ANALYSIS AND INTERPRETATION

Expectations from global competitiveness for decision makers and problem solvers have increased tremendously. Professional Education now needs to move beyond conventions in order to catch up with a rapidly changing context. In such situation more number of graduates and Post graduates coming out of many universities of India has confusion towards selecting their further education. Many numbers of students show their interest towards management education. To be more specific 62% of the people prefer to perceive management education after their graduation and only 38% of people like to tradeoff towards job or other activities.

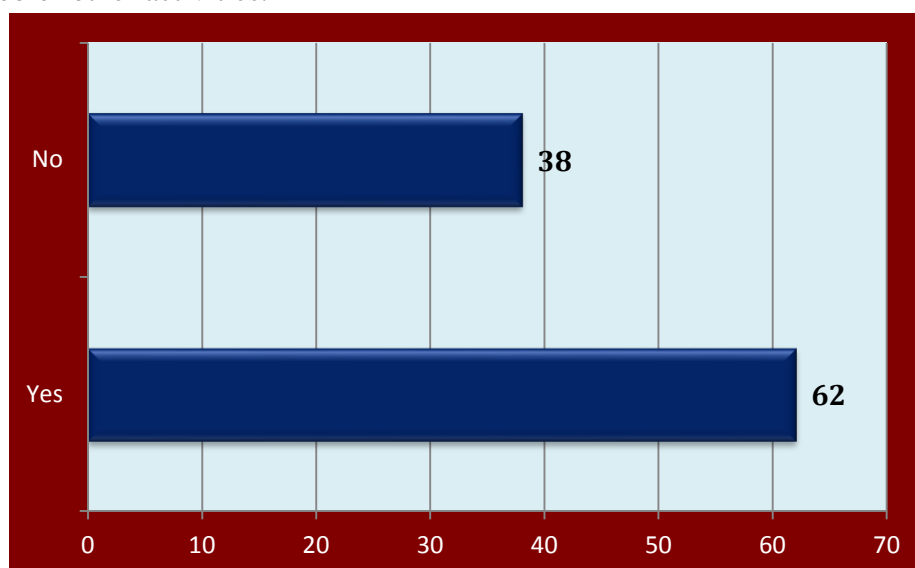


Chart 1: Students show their interest towards management education.

Today, business schools have the challenging task of developing the competency level of students to meet corporate expectations. In such a situation students are very much specific in choosing the any management institution for their studies. In current scenario 37% students prefer to go management premier institutes, where in 30% of students prefer university departments which are offering management education and 21% and 12% students prefer government institutes and affiliated colleges respectively.

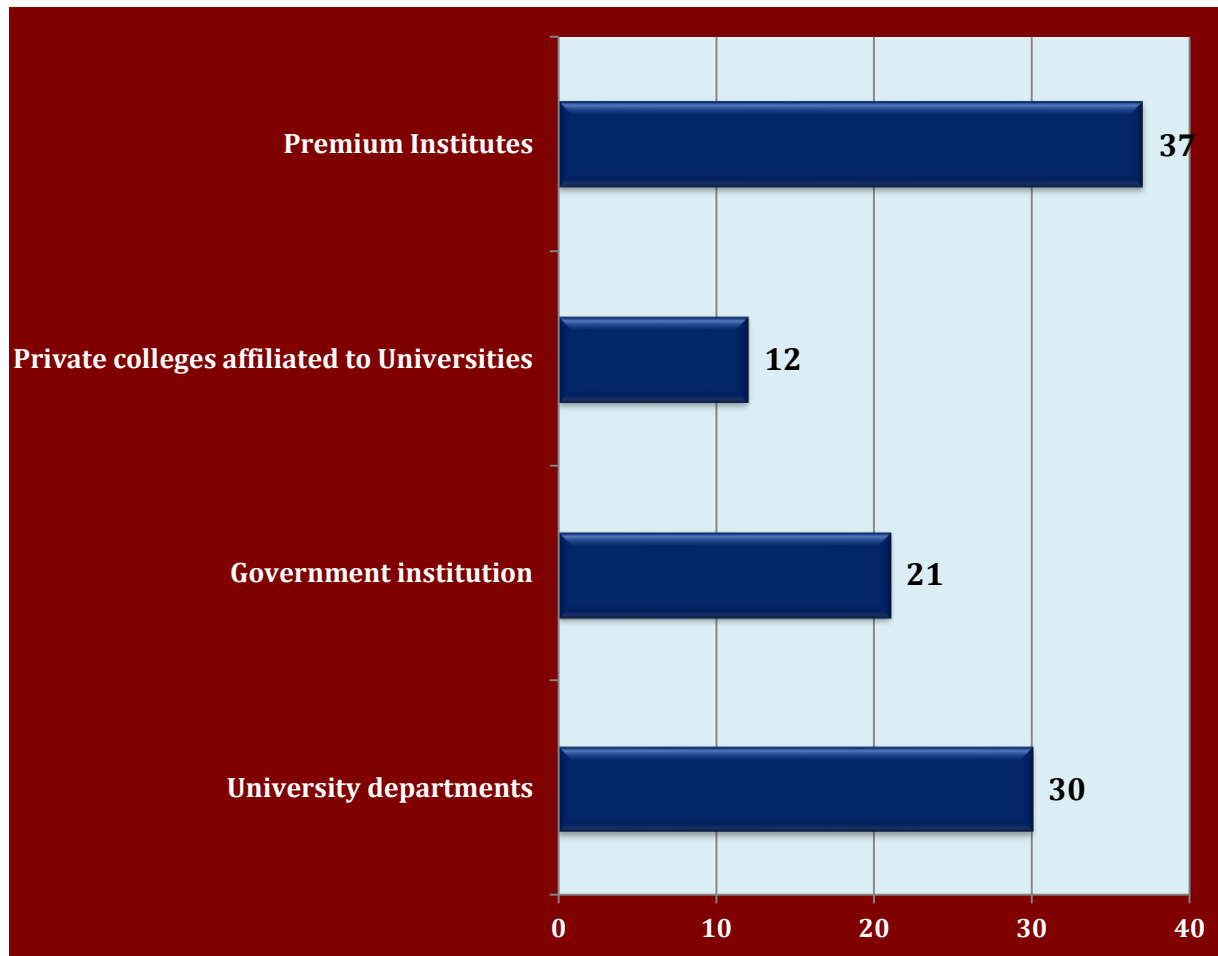


Chart 2: Students are very much specific in choosing the any management institution for their studies.

Owing to the globalization, privatization & liberalization lot of changes are noticed in the functioning of industries. Naturally industries across the world are required to have the manpower with multi-skills rather than simply knowledge oriented. Most of the B-Schools are molding their self & making the changes in their curricula as per the demand of industries. Now a day's learning has become more students centric. Students are well aware of global competition. Students have a keen watch on management institutions. On this back ground expectations from students from management institutes has increased with increase of competition. Student's wishes to go to the institution which is giving good placements (34%) have good infrastructure (13%), well-structured course material (16%), possessing quality faculty (11%) and many other factors.

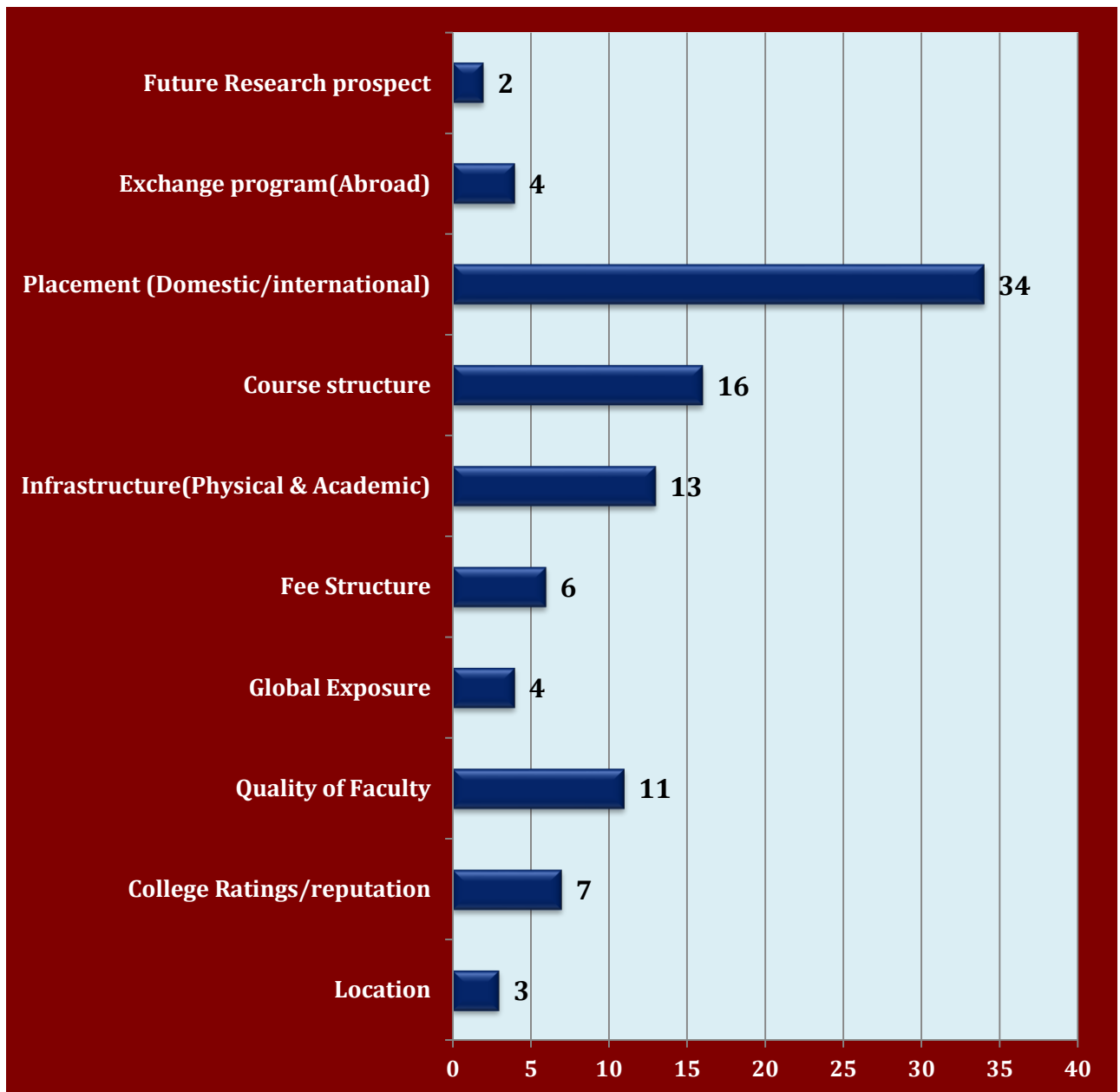


Chart 3: Student's wishes to go to the institution which is giving good placements have good infrastructure including well-structured course material. Likewise, possessing quality faculty and many other factors

Branding has made in-roads into management education. Top B-Schools are continuously changing the contents & delivery modes. It is equally imperative to Indian B-Schools to make management education context specific. Professional Education now needs to move beyond conventions in order to catch up with a rapidly changing context. Given the developments in today's business environment, preparing students for their future will require significant change in the curriculum and pedagogy. The expectation of the students from any management course is depicted in following chart, in which students consider exposure to industry as important as 33% followed by assignment & project as 23% important and structured syllabus as 13% important.

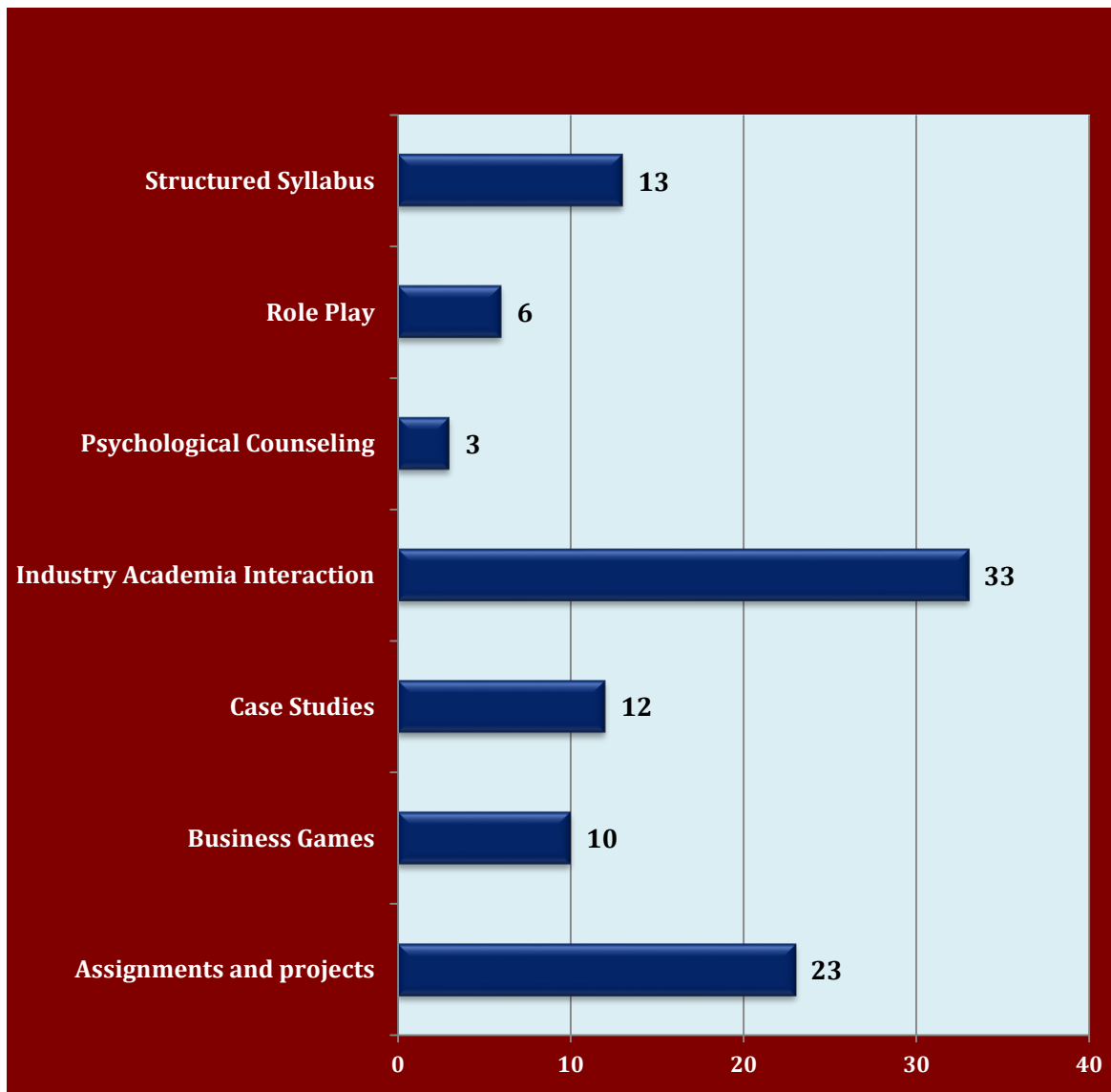


Chart 4: Expectation of the students from any management course

9. FINDINGS

- 56% of the respondents were graduates, 34% are post graduate and 10% have other educational background.
- 38% of the respondents belongs to urban area, 46% and 16% belongs to semi urban and rural areas respectively.
- 38% of the student's encouraging factor for management education is their own decision followed by 28% influence by family. 16% and 18% influence is caused by social media and friends respectively.
- 23% were having prior work experience, among this 3% worked for managerial level, 5% senior level, 7%&8% were worked at middle level and junior level respectively.
- 25% of respondents who are having work experience wish to go for MBA course and the 37% wishes for PGDBM.

- For payment of fee 52% look for bank loan and 29% from parents help. 11% from their own savings and 8 from other sources.
- 63% student's likes take admission for management course via common entrance test and 37% by paying donation.

10. SUGGESTION

- For admissions students looks for institute placement, infrastructure, course structure and quality faculties' management institutes must take care of these aspects.
- Students prefer bank loans to fund their education. Institutes must try to tie up with some banks to stimulate the funding.
- Students require more industrial exposure; hence management institute should provide them the same.
- Even today students prefer to go premier institutes after having number of private and government institutions which are offering management courses. Management institutes must try to develop their quality as good as premier institutes.

11. CONCLUSION & FUTURE RESEARCH DIRECTIONS

The institutions must ensure good quality of time and money devoted to improving the quality of service delivered to its students. Management institutes require world class professors and students — and a culture to sustain and stimulate such a world class environment. Management Institutes may not be able to build internationally recognized high quality research-oriented institutes overnight where students gather knowledge and think beyond just the theory of the subject, but at the moment management institutes has the key elements in place to begin and sustain the process management institutes will need to create managers who can compete internationally to fully participate in the new world economy. Without these managers, management institutes may be destined to remain a scientifically and managerially backwater. Research could be further fine-tuned with a better respondent sample size which will give better results. A longitudinal study to track changes in the student's perception of quality initiatives taken over a period of time can provide more insights into the research.

12. LIMITATIONS OF STUDY

- As the research is only based student's perception, it does not provide a proof that all the other stake holders have same perception.
- Sample size is restricted to 100.

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Dr. Ritika Sinha is presently assistant professor at the Canara Bank School of Management Studies (P.G Department of Management Studies of Bangalore University). She had brilliant Academic Career. She is doctorate in Merchant Banking. She has rich teaching and research experience in Management departments of reputed Universities like South Gujrath University Surat, Banasthal Vidyapeeth Rajasthan and A.P.S. University Madhya Pradesh. Her Areas of expertise are Economics, Financial Management, Corporate finance and Investment Management. Dr. Sinha is a Prolific writer. She has co-authored several books including Economics for Managers, Dynamics of

Business Environment. She has contributed widely to many journals. She has rich experience of guiding and examining doctoral thesis.



Pallavi S received her MBA from City Engineering College of Visvesvaraya Technological University, Bangalore in the year 2010. She has 2 years of corporate experience in one of the renowned financial firm KPMG in the field of corporate and individual Tax. Her area of research interest is Finance, Mergers & Acquisition and Management studies. Currently she is a research scholar in Canara Bank School of Management Studies (P.G Department of Management Studies) of Bangalore University, Bangalore.

A Trust Based Clustering with Bio-inspired Routing Algorithm for Wireless Ad-hoc Networks

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1 st	Sudipta Kundu	M.Tech. Student, Department Of Computer Sci. & Engineering , School of Engg. & IT, MATS University, Gullu Aarang Campus, Raipur C.G., India
2 nd	Sandeep Gonnade	Assistant Professor Department Of Computer Sci. & Engineering , School of Engg. & IT, MATS University, Gullu Aarang Campus, Raipur C.G., India
3 rd	Devendra Kumar	M.Tech. Student, Department Of Computer Sci. & Engineering , School of Engg. & IT, MATS University, Gullu Aarang Campus, Raipur C.G., India

Abstract

The bio-inspired routing algorithm was adopted from the behavior of an insect called Bombyx Mori, a male silkworm. This routing algorithm is a typical straight-line path representing a shortest-path algorithm and a zigzag-path as an extended shortest-path algorithm. In this research paper a Trust Based Clustering with Bio-inspired (TBCB) algorithm is proposed. The proposed TBCB algorithm adds advantage over Bomby Mori algorithm by utilizing Trust Model and Energy Model. Trust model may be more accurate to establish and connect the shortest path among the nodes and Energy model to show up how much it create energy balanced network. TBCB method initializes all nodes of the network with their initial energy level and initial trust value parameters. For male node to go ahead towards Female node, a

stimuli message is generated by Female node. Here the location finding for male node is judged and it starts moving towards female node following zigzag path. It always moves finding the shortest path which achieves accuracy in finding the best appropriate path to reach its destination node. Whenever a male node is communicated with other than female node it minimizes its transmission range to save its energy and increase its lifetime. This process is repeated till Male node reaches near to FEMALE Node. When male node is reached near FEMALE node under one hop distance it senses the location identity and trust value of the desired node, then it follow turn around way model and reaches to its destination. Proposed algorithm design and method is implemented using simulation tool NS-2 and evaluated its performance based on relevant parameters packet delivery ratio, packet loss, average delay, average throughput, routing overhead and normalized routing load. The simulation results showed that proposed TBCB algorithm improves the performance over Bombyx Mori based bio-inspired routing algorithm.

1. INTRODUCTION

Ad-hoc wireless networks are increasing in popularity, due to the spread of laptops, sensor devices, PDAs and other mobile electronic devices, in some cases, without an adequate infrastructure to rely on. These devices will eventually need to communicate with each other. That's why we need routing protocols that can work without any central gateway to connect with. At the same time, bio-inspired routing algorithms have been used to solve optimization problems applied to data networks. Routing is one such optimization problem where such algorithm has been applied like ACO algorithm, Genetic algorithms, Genetic programming algorithms etc.

Biological systems have been thriving for millions of years and have intricate ways to achieve goals both simply and effectively. Many biological systems like those of ant colonies or bee hive behaviour exist where each member of the system has a small role but a greater goal emerges out of the combined accomplishments of each member. This concept has received much attention in the ad-hoc community as it resembles the distributed nature and needs of ad-hoc networks. Ant Colony inspired routing protocols for Ad-hoc networks such as Sensor-driven Cost-aware Ant Routing (Chen, Guo, Yang, & Zhao, 2006), Improved Adaptive Routing (IAR) algorithm (Aghaei, Rahman, Gueaieb, & Saddik, 2007) and ANT Colony Optimization (ACO) method (Saleem, 2011). BeeAdHoc is also a swarm based routing protocol which has had an immune based solution developed for its security.

2. MOTIVATION OF RESEARCH

Ad-hoc networks have various applications from military to rescue to monitoring and in many cases they provide information that influences the safety of human beings. Having a secure and reliable ad-hoc network where all nodes take the same share of the work load is crucial to the application using the network as an infrastructure. A system that detects

abnormalities and malicious activity and responds accordingly puts up a line of defence for that application which would have deemed extremely vulnerable without.

An autonomous bio-inspired response selection approach seems to be the promising solution for ad-hoc networks security. The *antigen-receptor degeneracy* method by Schaust and Szczerbicka (2011) is the prevalent bio-inspired intrusion response method. In existing system, an algorithm based on the behaviour of the male silkmoth exhibited while looking for a pheromone source is proposed. The silkmoth's behaviour includes a unique flying technique. The flying technique considered for the routing algorithm is a typical straight-line path representing a shortest-path algorithm and a zigzag-path as an extended shortest-path algorithm. Actually this paper is much more sufficient to tell that a bio-inspired (male silk moth) routing algorithm works well in wireless network. But if we add following advantages over this algorithm, also looking out on its future work we could enhance such bio-inspired algorithm. We aim to overcome the main weakness of this algorithm.

We are going to address the following research questions:

- To what extent is it possible to predict the behaviour of appropriate bio-inspired routing algorithm in an ad-hoc network following Trust Model and Energy Model?
- To what extent does the feedback vary with the existing Bio-inspired algorithm and proposed TBCB algorithm?

Having answered these questions, it should be possible to design better bio-inspired algorithms for extended performance in ad-hoc networks.

3. RESEARCH CONTRIBUTION

We investigate the different bio inspired routing algorithms, and try to enhance such algorithms by adding advantage over it using trust model and energy model. In the implementation part of the research we focus on AODV as the best overall performing routing protocol in ad-hoc networks. The aim of the research is set by studying base paper [1]:

- From BASE Paper [1], one can conclude that a male-silkmoth inspired algorithm is better in finding out shortest path in wireless networks.
- Also base paper suggests future work that there is need of enhanced algorithm to investigate more on its performance.
- The objective set for this research is to develop a new trust based bio-inspired algorithm to add the advantage of trust & energy balancing in Wireless Ad-hoc Networks.
- The proposed algorithm design and method implemented using simulation tool NS-2. We can name it as TBCB (Trust Based Clustering with Bio-inspired algorithm).
- We simulate TBCB algorithm for wireless network environment to check out how better this algorithm is working than existing bio-inspired routing algorithm. Simulative Parameters considered are :

- A. Bio-inspired Routing Throughput
- B. Bio-inspired Routing Packet loss
- C. Bio-inspired Routing Packet Delivery Ratio (PDR)
- D. Bio-inspired Routing Normalized routing Load (NRL)
- E. Bio-inspired Routing Delay
- F. Bio-inspired Routing overhead

4. LITERATURE SURVEY

There are many researchers who work on developing bio-inspired algorithms, their work is been summarized in this section.

GAs stands for Genetic Algorithms based on evolutionary based bio-inspired algorithms proposed by J.H. Holland in 1973 [2]. They follow the principles of Charles Darwin Theory of survival of the fittest. GAs begins with initialization of population of chromosome, then for each chromosome an appropriate fitness function is evaluated where they undergo cross over and mutation thus giving new set of solutions (offspring).

GP stands for genetic programming proposed by Koza, John R in 1992 [3]. GP is the extension of GAs which differs only in terms of representation of solution. The population in GP generates diversity in values of genes as well as structure of individuals.

ES stands for evolution strategies proposed by Bienert, Rechenberg and Schwefel in 1964 [4] to optimize aerodynamic design problem robotically. This algorithm is inspired by theory of adaptation and evolution by means of natural selection. It utilizes the self-adaptive mechanism for controlling the application of mutation which is the main feature of such algorithms.

DE stands for differential evolution proposed by R. Storn and K. Price in 1995 [5]. DE differs from GAs, in GAs mutation is the result of small pre combination to the genes of an individual while in DE, mutation is the result of arithmetic combination of individuals. DE automatically adapts the mutations increments to the best value during evolutionary process stage.

Swarm Intelligence based bio-inspired routing algorithm is a recent and emerging paradigm for implementing adaptive systems proposed by E. Bonabeau, M. Dorigo and G. Theraulaz in 1999 [6]. Swarm Intelligence (SI) is based on collective social behavior of real world insect swarms as a problem solving tool.

PSO stands for particle swarm optimization which is intelligence oriented, stochastic and population-based global optimization technique proposed by Kennedy and Eberhart in 1995 [7]. PSO is inspired by the social behavior of bird flocking searching for food. It has unique searching mechanism, simple concept, and computational efficiency and ease implementation, hence it is applied in many engineering optimization areas.

ACO stands for ant colony optimization proposed by Dorigo and Di Caro in 1999 [8]. It is the most powerful swarm intelligence based bio-inspired routing algorithms. It is inspired by foreign behavior of ants in the wild, the phenomenon is known as stigmergy. The main

aspect of ACO is that several ant species find shortest path between ant's nest and the food by tracing pheromone trails, strong pheromone trail indicates higher desirability.

ACS stands for ant colony system introduced by M.Dorigo, V.Maniezzo, & A. Colorni in 1996 [9] to improve performance of ant systems. It is based on four modifications applied to an ant system namely different transition rule, different pheromone trail update rule, local update of pheromone trail to favor exploration and use of candidate list to restrict the choice.

AIS stands for artificial immune system algorithm proposed by D. Dasgupta in 1999 [10] which is based on clone selection principle in human beings. It is inspired by human immune system which is highly adaptive systems having numerous strengths like immune recognition, reinforcement learning, feature extraction, immune memory, diversity and robustness. In AIS searching power is efficient and mutation operation can be uniform, Gaussian or exponential.

ABC stands for artificial bee colony algorithm proposed by XS Yang [11] in 2009. In ABC, an individual entity like bee in bee colony exhibit a simple set of behavior policies such as migration, replication, death, but a group of entities like bee colony exhibit complex set of behavior policies such as scalability and adaptability.

FSA stands for fish swarm algorithm proposed by X. Li, Z.Shao, J.Qian in 2002 [12] which is a new population based swarm intelligence evolutionary computation technique. It is inspired by natural instructional behavior of fish. FSA simulate three typical behavior namely searching for food, swarming in response to a threat and following to increase the chance of achieving a successful result.

GSO stands for group search optimizer algorithm proposed by S.He, Q.H.Wu in 2006 [13] which is a population based optimization algorithm. It is inspired by animal foraging behavior which adopts the producer-scrounger (PS) for designing optimum searching strategies. It constitutes three types of members namely Producers, Scroungers and Rangers. The task of producing strategies & searching for food is done by Producers, the task to perform scrounging strategies & joining uncovered resources is done by Scroungers and the task to perform random walk motion is done by Rangers.

SFLA stands for shuffled frog-leaping algorithm proposed by Muzaffar Eusuff and Kevin Lansey in 2003[14]. It has efficient mathematical function and global search capability which is population based heuristic algorithm. It is inspired by interactive exchange of information of frogs searching for food laid on isolated stones randomly located in a pond. Some characteristics of SFLA are simple concept, fewer parameter adjustment, prompt formation, great capability in global search and easy implementation.

BFA stands for Bacterial Foraging Optimization Algorithm introduced by K.M. Passino in 2002 [15]. It consist three mechanisms namely chemo taxis, reproduction and elimination-dispersal. In chemo taxis, a cell-to-cell communication mechanism is established to simulate the biological behavior of bacterial movement. In reproduction, only the best adapted bacteria tend to survive and transmit their genetic characters to succeeding

generations. In elimination-dispersal, randomly selects part of the bacteria population to diminish and disperse into random positions in the environment.

There can be numerous and complex types of interactions among the species of ecosystem. An Ecosystem provides rich source of mechanisms for designing and solving difficult engineering and computer science problems. It comprises with the biotic and non-biotic organisms which interacts with ecological entities like soil, water, air etc.

IWC stands for invasive weed colony algorithm proposed by A.R. Mehrabian and C. Lucas in 2006 [16]. It is a stochastic search algorithm which is inspired by ecological process of weed colonization and distribution. IWC solves complex problems with appreciable efficiency including linear and non-linear optimization problems.

PS2O is a multi-species optimizer which extends the dynamics of the canonical PSO algorithm proposed by Hanning Chen and Yunlong Zhu in 2008 [17]. It is inspired by evolution of symbiotic species in natural ecosystems and heterogeneous interaction between species. In PS2O cooperation occurred in two levels, i.e., species level (interaction between species) and individual level (interaction within species).

BBO stands for Biogeography-Based Optimization algorithm proposed by Dan Simon in 2008 [18]. It is inspired by mathematical models of biogeography by Robert MacArthur and Edward Wilson. In BBO, there are two main operators: migration (which includes both emigration and immigration) and mutation. Mutation is used to increase the diversity of the population to get the good solutions.

5. PROPOSED SYSTEM OVERVIEW

Define TBCB algorithm is the enhancement of existing bio-inspired routing algorithm. TBCB method adds the advantage of Energy Mode and Trust model to its traditional routing protocol method. The existing system does not ensure about trust model which must be set up among mobile agents in wireless ad-hoc network. This trust model may be more accurate to establish and connect the shortest path among the nodes. Also, existing system does not consider energy model to show up how much it create energy balanced network. As the existing algorithm is cantered on Male-silk moth node i.e. single node of the network which decides the shortest path, so it is needed that this node must be more energy efficient to work with all node in wireless network properly and effectively. Following figure 5 shows the flowchart of working of TBCB algorithm.

TBCB method initializes all nodes of the network with their initial energy level and initial trust value parameters. For male node to go ahead towards Female node, a stimuli message is generated by Female node. Here the location finding for male node is judged and it starts moving towards female node following zigzag path. It always moves finding the shortest path which achieves accuracy in finding the best appropriate path to reach its destination node. Whenever a male node is communicated with other than female node it minimizes its transmission range to save its energy and increase its lifetime. This process is repeated till Male node reaches near to FEMALE Node. When male node is reached

near FEMALE node under one hop distance it senses the location identity and trust value of the desired node, then it follow turn around way model and reaches to its destination.

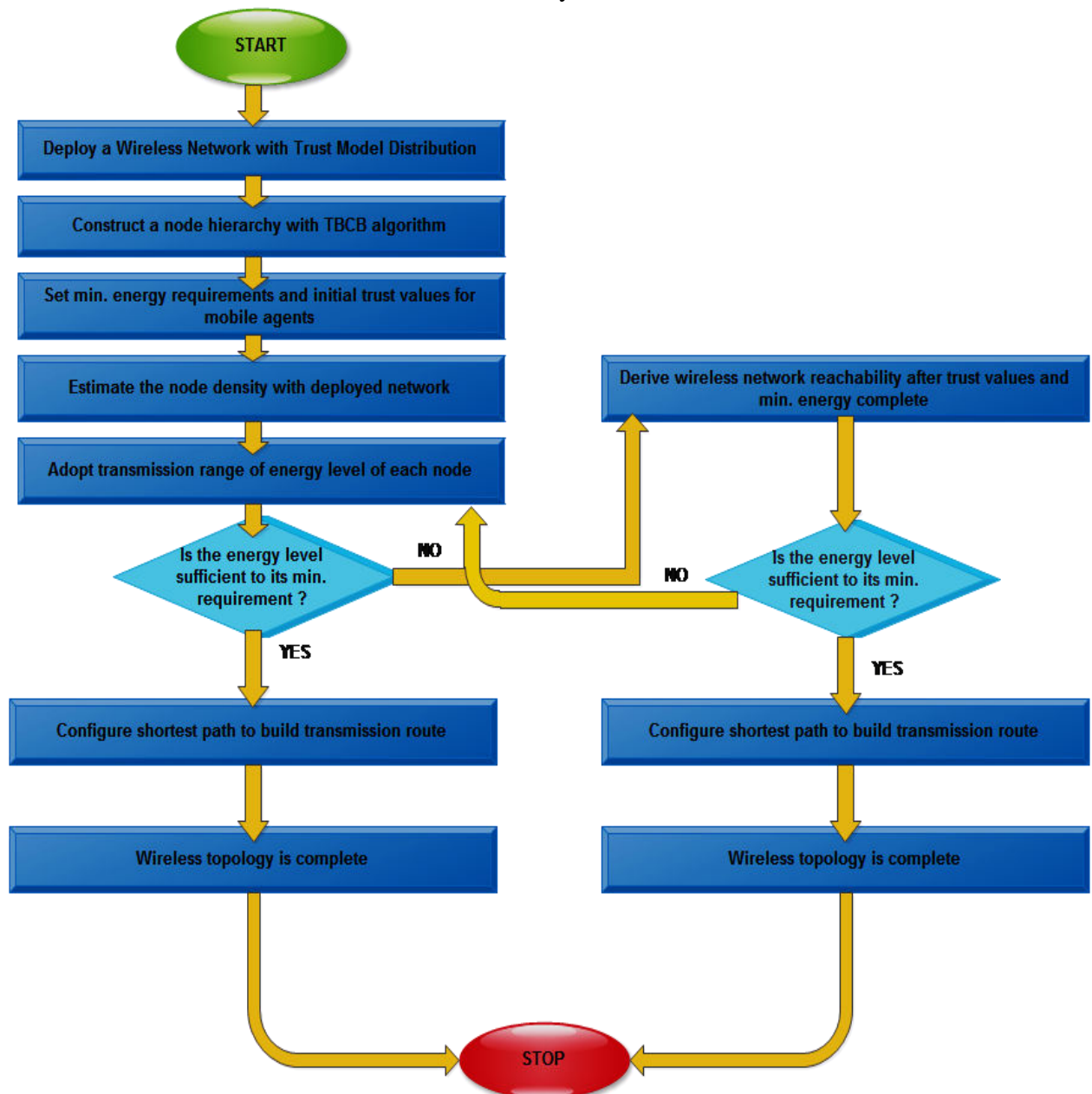


Figure 5.1: TBCB Flowchart

6. IMPLEMENTATION

To conduct experiment, the very popular simulation tool NS-2 is used. The main reason to select this tool is that it has pre-installed setup of many routing protocols. Here we consider AODV routing protocol for performance analysis. Also it has flexibility to expand and adopt the code written in C++ language. First of all we have implemented the TBCB method to show up energy of the nodes and assigned the trust to them and modified the appropriate routing protocols. Figure 6.1 shows the snapshot of C++ code for proposed TBCB method based on Energy model and trust model.

```

bid = 1;
//-----Energy Model and Trust Feature Declaration for TBCB algorithm-----

xpos = 0.0;
ypos = 0.0;
MobileNode *iNode;
iEnergy = 10.0;
trust = 1.0;
trustsend=1.0;
trustrecv=1.0;

bio_inspired_algo = false;
TBCB = false;

//-----END-----

LIST_INIT(&nbhead);
LIST_INIT(&bihead);

logtarget = 0;
MTBCBifqueue = 0;

```

Figure 6.1: Energy model and Trust Feature Declaration for TBCB algorithm

Following figure 6.2 shows the snapshot TBCB algorithm invoked from the TCL input file where every nodes needs to work with this algorithm.

```

#-----BIO-Inspired & TBCB algorithm combined in INPUT TCL FILE-----
$ns at 0.0 "[Sn(93) set ragent_] bio_inspired_algo"

$ns at 0.0 "[Sn(0) set ragent_] TBCB"
$ns at 0.0 "[Sn(2) set ragent_] TBCB"
$ns at 0.0 "[Sn(3) set ragent_] TBCB"
$ns at 0.0 "[Sn(4) set ragent_] TBCB"
$ns at 0.0 "[Sn(5) set ragent_] TBCB"
$ns at 0.0 "[Sn(6) set ragent_] TBCB"
$ns at 0.0 "[Sn(7) set ragent_] TBCB"
$ns at 0.0 "[Sn(8) set ragent_] TBCB"
$ns at 0.0 "[Sn(9) set ragent_] TBCB"
$ns at 0.0 "[Sn(10) set ragent_] TBCB"
$ns at 0.0 "[Sn(11) set ragent_] TBCB"
$ns at 0.0 "[Sn(12) set ragent_] TBCB"
$ns at 0.0 "[Sn(13) set ragent_] TBCB"
$ns at 0.0 "[Sn(14) set ragent_] TBCB"
$ns at 0.0 "[Sn(15) set ragent_] TBCB"
$ns at 0.0 "[Sn(16) set ragent_] TBCB"
$ns at 0.0 "[Sn(17) set ragent_] TBCB"
$ns at 0.0 "[Sn(18) set ragent_] TBCB"
$ns at 0.0 "[Sn(19) set ragent_] TBCB"
$ns at 0.0 "[Sn(20) set ragent_] TBCB"
$ns at 0.0 "[Sn(21) set ragent_] TBCB"
$ns at 0.0 "[Sn(22) set ragent_] TBCB"
$ns at 0.0 "[Sn(23) set ragent_] TBCB"
$ns at 0.0 "[Sn(24) set ragent_] TBCB"
$ns at 0.0 "[Sn(25) set ragent_] TBCB"
$ns at 0.0 "[Sn(26) set ragent_] TBCB"
$ns at 0.0 "[Sn(27) set ragent_] TBCB"
$ns at 0.0 "[Sn(28) set ragent_] TBCB"
$ns at 0.0 "[Sn(29) set ragent_] TBCB"
$ns at 0.0 "[Sn(30) set ragent_] TBCB"
$ns at 0.0 "[Sn(31) set ragent_] TBCB"

```

Figure 6.2: TBCB algorithm invoked from input TCL file

Following figure 6.3 shows the snapshot TBCB algorithm from the NAM output window where the status of energy levels and trust values of the nodes are shown and communicating with each other accordingly.

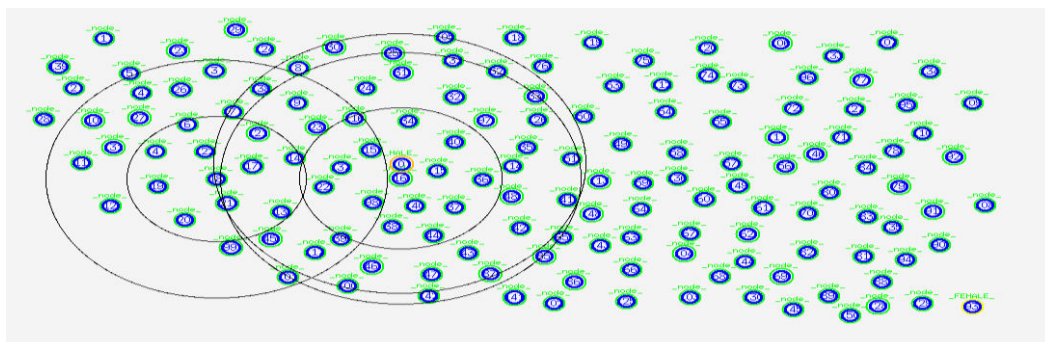


Figure 6.3: NAM window output for TBCB algorithm

7. RESULTS & GRAPHS

7.1 Packet Delivery Ratio

Following figure 7.1 shows the Packet Delivery Ratio (PDR) graph for Bio inspired algorithm and TBCB algorithm. There are total 6 scenarios considered with varying no of nodes ranging from 25 nodes to 150 nodes. For the first three scenarios up to 75 nodes both algorithms shows nearly the same packet delivery rate but as the nodes increase the TBCB algorithm achieves higher PDR rate than bio-inspired algorithm.

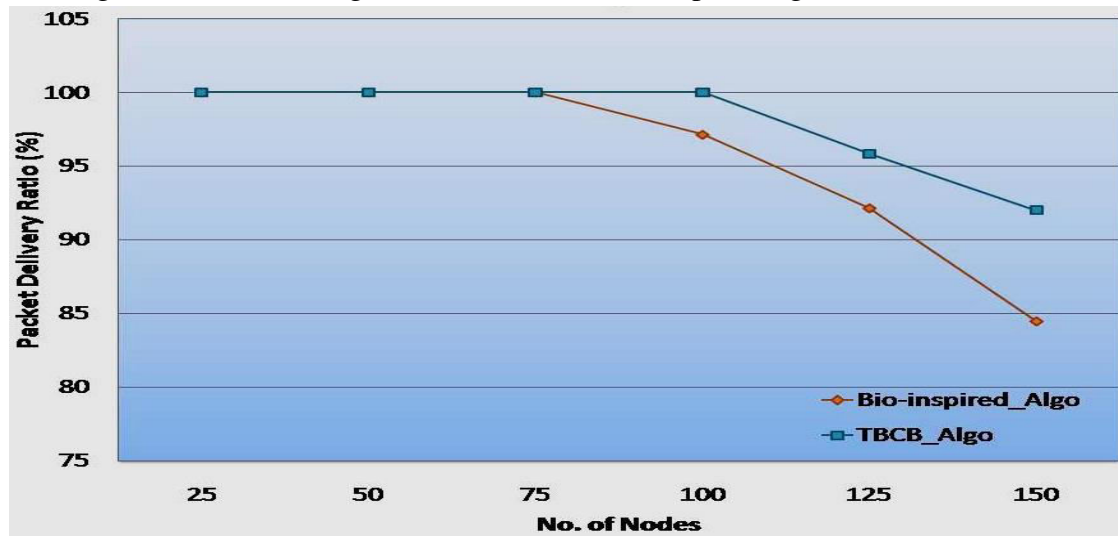


Figure 7.1: Packet Delivery Ratio

7.2 Packet Loss

Following figure 7.2 shows the Packet loss graph for Bio inspired algorithm and TBCB algorithm. Again for the first three scenarios up to 75 nodes both algorithms shows nearly the same packet loss rate but as the nodes increase the TBCB algorithm achieves lower packet loss rate than bio-inspired algorithm.

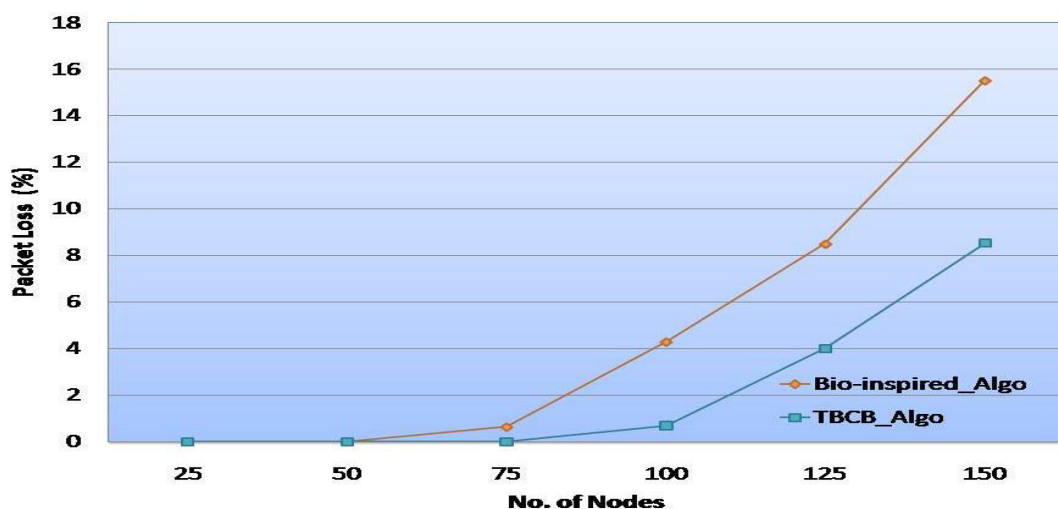


Figure 7.2: Packet loss

7.3 Average Delay

Following figure 7.3 shows the average delay graph for Bio inspired algorithm and TBCB algorithm. Here for the first three scenarios up to 75 nodes both algorithms shows nearly the same average delay but as the nodes increase the TBCB algorithm achieves lower average delay than bio-inspired algorithm.

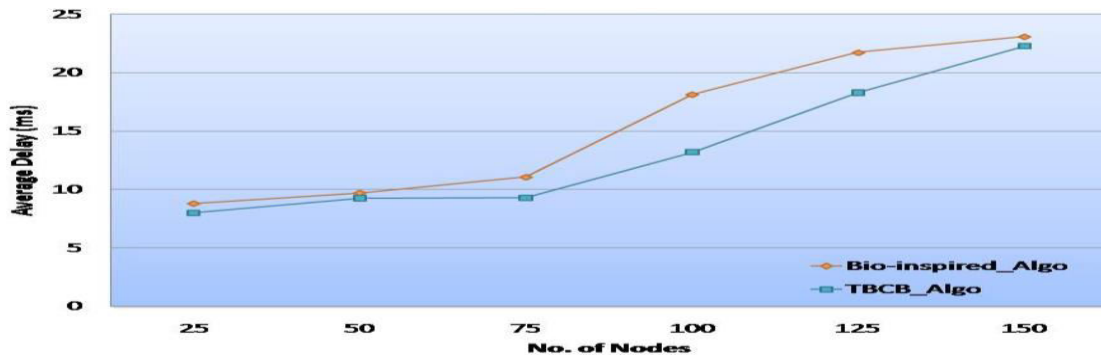


Figure 7.3: Average Delay

7.4 Average Throughput

Following figure 7.4 shows the average throughput graph for Bio inspired algorithm and TBCB algorithm. For all scenarios both algorithms shows nearly the same average throughput rate but TBCB algorithm performs better than bio-inspired algorithm.

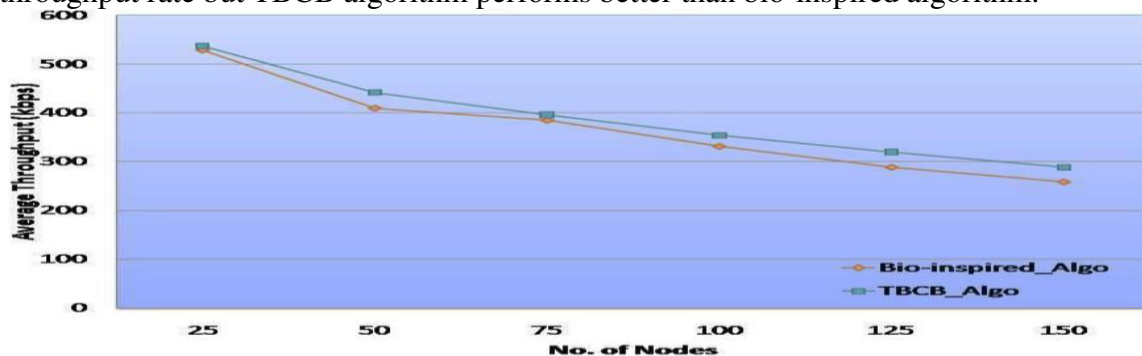


Figure 7.4: Average Throughput

7.5 Routing Overhead

Following figure 7.5 shows the routing overhead graph for Bio inspired algorithm and TBCB algorithm. For all scenarios both algorithms shows nearly the same routing overhead but TBCB algorithm performs better than bio-inspired algorithm.

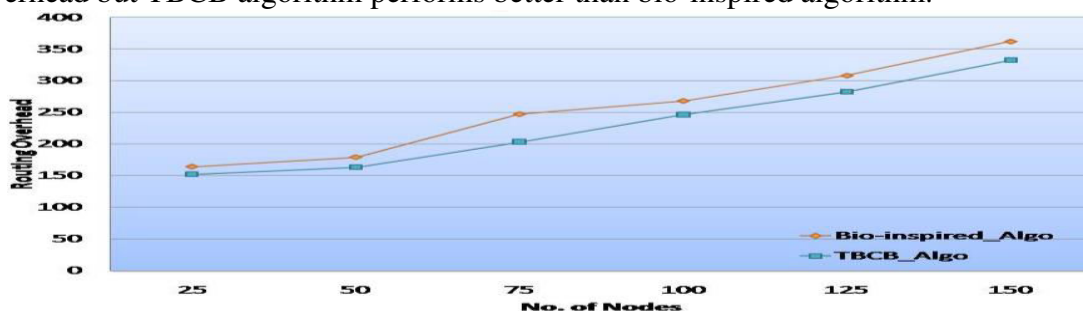


Figure 7.5: Routing overhead

7.6 Normalized Routing Load

Following figure 7.6 shows the normalized routing load graph for Bio inspired algorithm and TBCB algorithm. For all scenarios both algorithms shows nearly the same normalized routing load but TBCB algorithm performs better in case of 125 nodes and 150 nodes than bio-inspired algorithm.

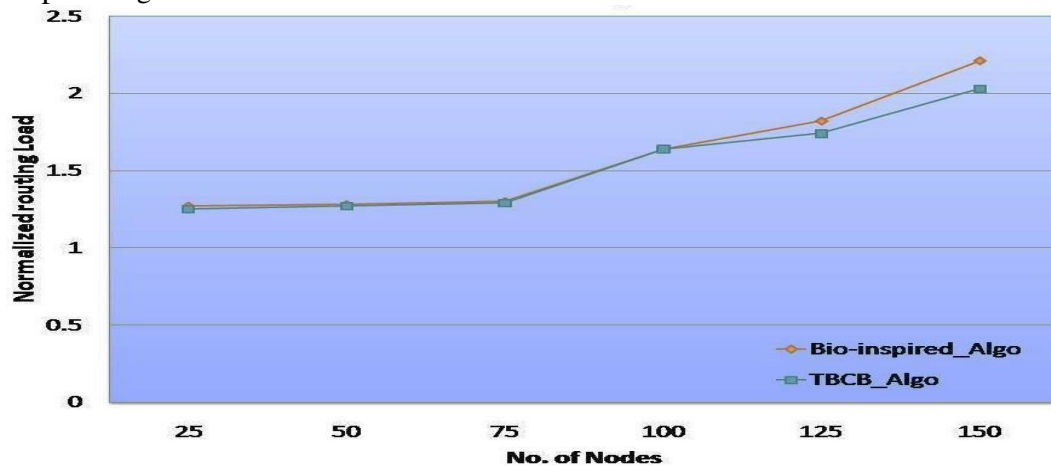


Figure 7.6: Normalized routing load

8. CONCLUSION & FUTURE WORK

In this paper the bio inspired algorithm is studied with adding advantage of Energy model and Trust model. A novel algorithm namely trust based clustered bio-inspired algorithm (TBCB) is proposed and implemented using network simulator 2. Trust model may be more accurate to establish and connect the shortest path among the nodes and Energy model to show up how much it create energy balanced network. TBCB method initializes all nodes of the network with their initial energy level and initial trust value parameters. In parametric evaluation of each method, simulation results show that AEC algorithm performs better EASR algorithm.

Future work of this research work relies on improving the performance of TBCB algorithm in terms of security. Although proposed method successfully enhanced the performance of the bio-inspired nodes but it is not capable of finding faulty node or non-working node; this work is carried over to the extended work.

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Role Of Emotional Intelligence, Perceived Stress, Learning Motivation and Learning Strategies For Academic Performance Of Engineering Students In Trivandrum

Paper ID	IJIFR/V3/ E10/ 023	Page No.	3683-3690	Subject Area	Management
KeyWords	Trait Emotional Intelligence, Perceived Stress, Self-Regulated Learning, Motivation to Learn, Learning Strategies, Academic Performance, Engineering Students				

1 st	Reney P.Varghese	Life Skills Trainer & PhD Research Scholar, Centre for Futures Studies, Gandhigram Rural Institute - Deemed University, Gandhigram, Tamil Nadu, South India
2 nd	Dr.T. Selvin Jebaraj Norman	Professor, Centre for Futures Studies, Gandhigram Rural Institute - Deemed University, Gandhigram, Tamil Nadu, South India
3 rd	Dr. H. Samuel Thavaraj	Assistant Professor, Department of Rural Industries & Management, Gandhigram Rural Institute - Deemed University, Gandhigram, Tamil Nadu, South India

Abstract

A vast array of research has been conducted to explore the relationship between motivation to learn and learning strategies (Chang, 2005; Pintrich, 1989; 1995; 1999). Emotional aspects which are unconscious but important for sustaining and determining the motivational orientation has not been investigated in many cases. During the past, identifying the best predictors of academic performance has been a major concern of both researchers and educators. The purpose of this study was to test the relationships between Emotional Intelligence, Perceived Stress, and Motivation to Learn, Learning Strategies and Academic Performance among undergraduate engineering students in Trivandrum, India. For this purpose, 130 students were randomly selected based on their own choice to participate in the study. Trait Emotional Intelligence, Perceived Stress and Motivational Strategies for

learning questionnaires were used. The results showed that Emotional Intelligence, Perceived Stress and Motivation to Learn have highly significant positive correlation with academic performance. Test Anxiety and Learning Strategies were also significantly associated with academic performance. But gender difference was not significant for the all the measures of scales.

1. INTRODUCTION

Self-regulation of cognition and behavior is an important predictor of student learning and academic performance (Corno & Mandinach, 1983; Corno & Rohrkemper, 1985). Academic performance could be predicted more accurately based on assessment of a variety of individual differences, not just the past achievement and cognitive capacity. Factors including motivation to learn and self-regulatory learning strategies have also been found to predict academic performance, controlling the effects on intelligence and personality (e.g., Chamorro-Premuzic & Furnham, 2008; Robbins, Lauver, Le, Davis, Langley, and Carlstrom, 2004).

Emotional intelligence has emerged as an outcome of two branches of psychological research during the past forty years. The first being cognition and affect. That means how cognitive and emotional processes interact to enhance thinking (Bower, 1981; Isen, Shaker, Clark, & Karp, 1978; Zajonc, 1980). The second was an evolution in models of intelligence itself. Instead of viewing intelligence strictly as how well one engaged in analytical tasks associated with memory, reasoning, judgment, and abstract thought, theorists and investigators began considering intelligence as a broader array of mental abilities (e.g., Cantor & Kihlstrom, 1987; Gardner, 1983; Sternberg, 1985).

In order to clarify the non-intellective factors which influence the academic performance, it is worthwhile to explore how the students' emotional intelligence and perceived stress are related to their motivation to learn and use of learning strategies.

1.1 Motivation To Learn and Learning Strategies

Self-regulation of cognition and behavior are the important components of student learning and academic performance. Zimmerman (1989) defined Self-Regulated Learning (SRL) strategies as "actions and processes intended in acquiring information or skills that involves purpose and instrumentality perceptions by learners. SRL comprises the use of motivational and learning strategies to the extent that students are motivationally, meta-cognitively, and behaviorally involved actively in their own learning processes (Zimmerman, 1989; Pintrich, 1995). According to Pintrich (1995), students learn self-regulation through experience and self-reflection. Pintrich (1995) envisages self-regulated learning as continuous adjustment of one's cognitive activities and processes to the demands of a particular learning situation (Pintrich & De Groot, 1990). There are several models of self-regulated learning and the majority of which stems from Bandura's (1986) socio-cognitive theory of human functioning.

Student motivation is considered a dynamic, multifaceted phenomenon (Eccles, Wigfield, & Schiefele, 1998; Graham & Weiner, 1996; Seifert, 2004). Pintrich and Schunk (2002)

had defined that, motivation is the process whereby goal-directed activity is instigated and sustained. This definition consists of variables which is used as operational indices in motivation research namely, (1) Task choice (i.e. ability to choose task based on the desired results), (2) Effort (i.e. action oriented process), (3) Persistence (i.e. to continue with efforts overcoming obstacles) and (4) Achievement (i.e. increasing the level of quality of above elements to raise standards of achievement).

1.2 Emotional Intelligence and Academic Performance

In the recent years Emotional Intelligence (EI) has been a popular topic in the academic literature (Charbonneau & Nicol, 2002; Ciarrochi, Deane, & Anderson, 2002; Mayer, Salovey, & Caruso, 2000; Palmer, Donaldson, & Stough, 2002; Petrides & Furnham, 2003; Roberts, Zeidner, & Matthews, 2001; Saklofske, Austin, & Minski, 2003).

Key literature in the field of Emotional Intelligence (EI) highlights the crucial distinction between two conceptualizations: Trait EI (or 'trait emotional self-efficacy') and ability EI (or 'cognitive emotional ability'). Trait EI refers to emotion-related behavioral dispositions and self-perceived abilities (Petrides, 2011). The operationalization of the construct through self-reports is consistent with the subjectivity of emotions and the nature of Trait EI as part of the personality domain. In contrast, Ability EI refers to emotion related abilities (Salovey & Mayer, 1990), it is directly linked to the intelligence domain, and is measured through maximum-performance tests. Schutte et al. (1998) had reported that scores on a self-report measure of emotional intelligence conducted at the beginning of the academic year significantly predicted grade point average at the end of the year.

Moreover, Parker and colleagues (Parker et al., 2004; Parker, Summerfeldt, Hogan, & Majeski, 2004) have reported slightly direct correlations between Trait EI and Academic Performance in high school as well as university samples, which points to the fact that the effects of Trait EI may vary across educational levels as well as across subjects, like those of other personality traits (e.g. Heaven, Ciarrochi, & Vialle, 2007; Laidra, Pullmann, & Allik, 2007; Petrides, Chamorro-Premuzic, Frederickson, & Furnham, 2005).

1.3 Perceived Stress and Academic Performance

Hackett et al. (1992) identified both perceived stress and academic self-efficacy as predictors of cumulative grade-point average (GPA) for traditional students enrolled in engineering schools. Good grades were associated with low perceived stress and high self-efficacy. Generally, the most harmful effect of stress is disrupting thinking and learning performance (Grandy et al., 1989, Goldstein, 1980, Akbari et al., 2011). Too much stress is likely to distract from learning (Grandy et. al., 1988, Heins, Fahey, & Leiden, 1984) and may also influence student's performance and decision making capabilities.

1.4 The Present Study

The different performance models briefly reviewed above, reveal the relationship of the constructs of Trait Emotional Intelligence, Self-Regulated Learning and Perceived Stress

to Academic Performance. In several previous researches, the relationships between these constructs and academic performance had been explored individually. The present paper aims to examine the moderating role of Trait Emotional Intelligence and Perceived stress in relation to academic performance as measured by GPA, among the undergraduate engineering students.

2.METHODOLOGY

2.1 Participants

The respondents of this study consisted of 130 (55 males and 75 females) undergraduate engineering students studying in a self-financing engineering college in Trivandrum, India. A random sample of students during the semester seven of 2015 volunteering to participate in the pilot study was selected and given the questionnaires. Students ranged from 20 to 22 years of age; the mean age was 20.87 years (SD=0.546) for males and 20.87 years (SD=0.475) for females.

2.2 Measures

The participating students were administered a survey questionnaire consisting of four sections. The first section of the survey questionnaire recorded demographics of the participants, which had questions on age, gender, course satisfaction, income and self-reported GPA, followed by the TEIQue-SF (Trait Emotional Intelligence Questionnaire), MSLQ (Motivated Strategies for Learning Questionnaire) and PSS-14 (Perceived Stress Scale). Cronback alpha was used as a measure of internal consistency and reliability of the MSLQ subscales. Only subscales with reliability indexes above or close to 0.7 were used.

2.2.1 Trait Emotional Intelligence Questionnaire –Short Form

TEIQue-SF (Petrides, 2009; Sevdalis, Petrides & Harvey, 2007) is a 30-item questionnaire is designed to measure Global Trait Emotional Intelligence (Trait EI). It is based on the long form of the TEIQue. Participants are asked to rate their degree of agreement with each item on a seven-point Likert Scale. The Global Trait EI score is calculated by summing up the item scores and dividing the total number of items. It can also yield a score for four factors of trait EI, i.e. well-being, self-control, emotionality and sociability.

2.2.2 Motivated Strategies For Learning Questionnaire

MSLQ (Pintrich, Smith, Garcia, & McKeachie, 1991) is an 81-item self-report instrument developed at the University of Michigan which assesses college students' motivational orientations and their use of different learning strategies in a college course on a seven-point Likert Scale. The 81-items are categorised into two major scales: the motivation to learn scale and the learning strategies scale. Each major scale consists of a set of sub-scales. The motivation to learn scale includes 31 items assessing students' goals and value beliefs, their beliefs about their skills to succeed and their anxiety about tests. The learning strategies scale consists of 31 items regarding students' use of different

cognitive and meta-cognitive strategies, and 19 items concerning student management of different resources. Since MSLQ in this study was used to measure the general academic efficacy, the measure was reworded to reflect that general orientation.

2.2.3 Perceived Stress Scale

Perceived stress scale (Cohen, Kamarck, & Mermelstein, 1983) is a fourteen-item scale designed to measure the degree to which individuals appraise their life as stressful. It is scored on a five-point Likert Scale.

3. RESULTS

SPSS was used for analysing the data. Cronback alpha was calculated to check the reliability of the Likert scales and adequate reliability was found (TEIQue-SF 0.836 n=30, PSS-14 0.703 n=14, Motivation to Learn 0.898 n=26, Test anxiety 0.684 n=5, Learning strategies 0.906 n=31). Even though the reliability index of test anxiety was 0.684, it was used. To ascertain any difference among the male and female, we compared the two subgroups with *t*-test. There were no significant gender differences in the scores on all measures of assessment. The cGPA mean was 7.28 (SD 0.622), the minimum and maximum being 5.60 and 8.85 respectively.

Pearson Product-Moment Correlation Coefficient was calculated for measuring correlation. On analysing the variables, we found that Test Anxiety correlated positively with perceived stress, while the correlation with Global Trait EI was negative. Perceived stress also showed significant negative correlation with Global Trait EI. A significant positive correlation was found between Global Trait EI and Academic Performance or cGPA. Motivation to Learn was also found to have a significant positive correlation with Academic Performance. There also exists a significant correlation between Learning Strategies and Academic Performance (Table 1).

A linear regression analysis was performed to examine statistically the relationship between cGPA and other dependent variables. The results of the regressions analysis obtained value of R being 0.87 which indicates a good level of prediction. The value of R² (Coefficient of Determination) indicates that our independent variables can explain 75% of the variability of our dependent variable (Table 2).

Table 1: Correlations among variables

Variable	cGPA	Motivation to Learn	Learning Strategies	Test Anxiety	Perceived Stress	Global Trait Intelligence
cGPA	1	.630**	.352**	-.182*	-.760**	.762**
Motivation to Learn	.630**	1	.457**	-0.112	-.421**	.517**
Learning Strategies	.352**	.457**	1	-0.053	-.229**	.435**
Test Anxiety	-.182*	-0.112	-0.053	1	0.109	-.192*
Perceived Stress	-.760**	-.421**	-.229**	0.109	1	-.674**
Global Trait Intelligence	.762**	.517**	.435**	-.192*	-.674**	1

** . Correlation is significant at the 0.01 level (2-tailed).
 * . Correlation is significant at the 0.05 level (2-tailed).

Table 2: Regression Model Summary

R	R Square	Adjusted R Square	F	Sig.
.87	.749	.743	125.13	.000 ^a
a. Predictors: (Constant), Global Trait Intelligence, Motivation to Learn, Perceived Stress b. Dependent Variable: cGPA				

Table 3: Regression Coefficients^a

Model	Unstandardised Coefficients		Standardised Coefficients	t	Sig
	B	Std., Error	Beta		
(Constant)	6.030	.446		13.515	.000
Motivation to Learn	.053	.010	.281	5.346	.000
Perceived Stress	-.087	.013	-.415	-6.814	.000
Global Trait Intelligence	.238	.046	.337	5.229	.000
a. Dependent Variable :cGPA					

4. DISCUSSION

It was found that, all the independent variables of academic self-efficacy (SRL) like Motivation to Learn, Learning Strategies and Emotional Self Efficacy (Trait EI) significantly predicted student's academic behaviours and attitudes as measured by the cGPA. These findings support the work of previous researchers who found that both cognitive and affective variables influenced students' achievement, behaviours and attitudes (Field, 2001; Khramtsova et al. 2007; Lyubomirsky, 2001; Salami, 2004; Wong, Wong & Chau, 2001). Students who had high self-efficacy by having less perceived stress, high emotional intelligence and who were happy were motivated to participate in relevant academic activities and developed positive attitudes that led to success in college.

5. CONCLUSION

The present research provided support for the relationship between Trait EI, Perceived Stress, Motivation to Learn, Learning Strategies and Academic Performance in a sample of undergraduate engineering students in Trivandrum, India. However, it will be essential to replicate these findings in a larger and more heterogeneous sample of students. Therefore, the conclusions drawn should be considered as tentative and an elaborate model incorporating various sub factors of motivational variables should be empirically tested. The possibility that constructs such as goal setting, self-efficacy, and intrinsic motivation might occupy an intermediate position between individual difference predisposition and the choice of self-regulatory strategies depending upon the specific characteristics of the learning contexts, which should be further explored. The intention of the study was to bring to attention some deep connections between Self-Regulated Learning and Trait Emotional Intelligence, rather than providing definitive answers.

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Inter-Relationship Between HRM Practices, Learning Organization And Organizational Effectiveness: A Review

Paper ID	IJIFR/V3/ E10/ 025	Page No.	3691-3704	Subject Area	HRM
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Esha Singh

Project leader
AKCDS, Amity University,
Noida, Uttar Pradesh

Abstract

HRM practices are an important driver of an organizational success. A learning organization is dependent upon the HRM practices prevalent in an organization, thus contributing to organizational effectiveness. It is vital for an organization to have a well-defined HRM practices that will induce an environment of learning within an organization, which will lead to success of the firm. The objective of this study is to analyze on the HRM Practices and key elements of learning organization and their impact on organizational effectiveness. The study will also investigate the interrelationship between HRM practices, LO and OE. From the study of previous literature, the relationship between HRM practices and LO, LO and OE, and HRM practices and OE is also depicted. Finally, this study will also be recommending key HR practices for learning organization which will lead to organizational effectiveness. Previous researches have been studied in order to extract useful information that will answer the questions of this study. This study will be beneficial for the managers and policy makers of an organization because then, they will be having much clarity on how to manage their human resources in the benefit of the organization as a whole and a mutual profit is sought as far as the objectives of an individual employee or an organization is concerned.

1. INTRODUCTION

1.1 HRM Practices

[1] Caligiuri (2013) highlighted that the HRM practices effectiveness is based on certain contingencies in multinational companies. It includes the moving parts such as country-level differences and cross-cultural differences in human resource activities which have a great effect on the HRM practices.

[2] Kim (2005) said that “good employees are supposed to have such characteristics as high satisfaction with their jobs, high commitment towards the organization, high motivation to serve the public and strong intentions to work for the organization willingly and devotedly”. Thus, contributing in the learning of the organization.

[3] Garavan (2000) determined that routine work of HRM and HRD is in the learning organizations building as: encouraging employees utilizing and managing knowledge; demonstrating networks appropriately; also involving learning in a double-loop system.

[4] Johnson (2000) detailed the best practice or high performance work practices are described as HR methods and systems that have universal, additive, and positive effects on organizational performance.

The variables for HRM Practices included in this study are as follows:-

- i.) Recruitment and Selection
 - ii.) Training and development
 - iii.) Performance appraisal
 - iv.) Compensation and benefits
 - v.) Employee relations
- I. Recruitment and selection- Some organizations like public sector adopt centralized recruitment whereas other organizations resort to decentralized system. There can be different sources of recruitment namely internal sources like vacancies, transfers, promotions, retired and retrenched employees, dependents and relatives of deceased and disabled employees or it can be external sources like education and training institutions, search engines, employment exchanges etc. Recruitment technically precedes selection. Selection is the process of matching the qualifications of applicants with job requirements.
 - II. Training and development- Training is done to increase the skills and knowledge of an individual of doing a job specifically. There are different types of training programs like Orientation training, Job training, Safety training, Promotional training, Refresher training, Remedial training etc. to enhance the skills of employees.
 - III. Performance appraisal- As defined by [5] Kleiman (2006) performance appraisal is related to the evaluation of the performances of its employees. It can easily create competitive advantage by the proper application of performance appraisal techniques by establishing performances of the employees at their job in two ways: by directing behaviors of the employees towards objectives of the organization and also ensuring that the objectives are met by controlling and monitoring that behavior.

- IV. Compensation and benefits- According to [6] Noe (2004), “incentive pay is pay tied to individual performance, profits and other measures of success. Organizations select forms of incentive pay to energize, direct or control employees’ behavior. It is influential because the amount paid is linked to predefined behaviors or outcomes”. HR Focus (May 2003), has developed a system of pay, which are as follows:
- Define pay.
 - Articulate your compensation philosophy
 - Develop job descriptions and job value information.
 - Obtain data.
 - Establish salaries and ranges.
 - Periodically review.
 - Communicate.
 - Support your policies.
- V. Clark and d’ Ambrosio (2005) identified “small or no salary increase and rising cost of health insurance paid by employees have made total compensation in many institutions less competitive”.
- VI. Employee relations- The term employee relations are used for both collectively and individually so as to analyze negative impact of human results from an economic perspective.

1.2 Learning Organization

[8] Aydin and Ceylan (2009) described “learning organizations as an organization capacity to develop capabilities to acquire new information and convert that information into knowledge”. It is a combined process of internal and external organizational systems alignment, culture of learning, including an emphasis on exploration and information, open communication, staff empowerment, and support for professional development. Learning organization may become the only sustainable source of competitive advantage. Learning organization is responsible for building an organization.

[9] Jackson (2006) defined that the need for the organizations to learn as holistic entities became more pronounced with the onslaught of globalization, favoring learning organization as a means of creating competitive advantage.

[10] Peter Senge (1997) identified a learning organization is where (i) expansion of the employees capacity so as to increase the results of the organization, (ii) thinking patterns, where (iii) aspirations of the employees, (iv) learning is continually done in an organization. It takes a lot of commitment to build a learning organization. There are 5 characteristics of a learning organization: Systems thinking, personal mastery, mental models, building shared vision and team learning.

Systems thinking- The idea of the learning organization developed from a body of work called systems thinking.

Personal mastery- is the commitment of a person doing a job to the learning process. A learning organization is the sum of an individual’s learning.

Mental models- These are perceptions of an individual as well as organizations. Also, these models must be changed so as to become a learning organization.

Shared vision- It is important in encouraging the employees so as to learn effectively in the development of a shared vision, because it provides common identities that provide focus and energy for learning. The learning organization tends to have flat, decentralized organizational structures.

Team learning- The advantages of the learning of the team is related to the employees growth which is happening quick and the organization's problem solving capability which in turn is enhanced through access to expertise and more importantly the knowledge.

[11] Yogesh Malhotra (1996) defined LO as Organizations with ingrained philosophies for anticipating, reacting and responding to change, complexity and uncertainty. The concept of a Learning Organization is relevant when there is increasing uncertainty and complexity within the environment of the organization.

[12] McGill (1992) also proposed a definition for the LO that if a company is able to respond to other information's which is new done by exchanging the information processing and evaluation techniques.

[13] Pedler, Burgoyne, Boydell (1991) defined that the learning organization is dependent on the training quality of the employees within the organization. A learning organization is characterized by the learning of an organization as a whole and also of its members to a great extent.

The advantages of learning organization are;

- high levels of innovation is maintained and remained competitive
- response to external pressures
- knowledge so as to better form a relationship between resources and customer needs
- quality of outputs is increased at all levels
- Corporate image is improved because of people orientation
- the pace of change is increased

1.3 Organizational Effectiveness

[14] Richard (2009) delineate effectiveness of the organization is connected with the interior performances outcomes. Organization effectiveness is important to success in any economy. Effectiveness of the organization can facilitate in achieving meant goals through communicative competency and ethics. Organization effectiveness additionally facilitates within the overall development of a company.

[15] Ortiz American state Guinea (2005) delineate that an effectiveness of the organization is once however booming associate degree organization is in terms of satisfaction with the work and therefore the impact of it on the people and therefore the organizations.

[16] Mintzberg (1991) recommended that effectiveness of the organization can occur once the interaction of seven basic forces; direction, efficiency, proficiency, innovation,

concentration, cooperation/culture and competition/politics are managed effectively. Effectiveness of the organization is measured in terms of 4 indicators; client orientation, worker satisfaction, commitment within the organization and monetary and growth performance.

Initial indicator: Client Orientation

Marketing is obtaining nice importance for the corporations day by day that facilitate them to extend their profits. The market familiarized corporations perform serious analyses for the selling construct.

[17] Deshpande (1993) outlined “customer orientation is that the set of beliefs that puts the client into the middle, whereas not excluding those of all different stakeholders like house owners, managers, employees, so as to develop a long-run profitable enterprise”. Therefore, the organizations use the client data to forecast the long run desires of them.

Second Indicator: Worker Satisfaction

[18] Lawler (2003) argued that “a firm’s hour strategy ought to be focused on developing skills and guaranteeing motivation and commitment”. During this statement, guaranteeing the motivation’ worries with the worker satisfaction. That’s why; the satisfaction of the workers takes on other importance.

Third Indicator: Organization Commitment

It is wide accepted that structure commitment is that the psychological strength of the linkage of a member to his organization within the literature. In step with Meyer associate Degreed Allen “a worker will at the same time be committed to the organization in an affection, normative, and continuance sense, at varied levels of intensity”.

Fourth Indicator: Monetary and Growth Performance

The monetary performance is that the live of a firm’s monetary health and therefore the growth performance is said with the rise within the volume of sales, variety of workers and new product compared to previous periods. The monetary and growth performance may be a concrete indicator that informs regarding the strength of a firm.

2. OBJECTIVES OF THIS STUDY

The following are the objectives of this study:

- I. To review HRM practices, learning organization and their contribution to the organizational effectiveness.
- II. To find out the relationship between HRM practices and learning organization.
- III. To find out the relationship between LO and OE.
- IV. To find out the relationship between HRM practices and OE.
- V. To investigate the interrelationship between HRM practices, learning organization and organizational effectiveness.
- VI. To recommend key HRM Practices that may lead to the learning organization and improvement in the effectiveness of the organization.

3. REVIEW OF LITERATURE

3.1 HRM and Learning Organization

[19] Ali (2013) prompted that “there could be a got to review the challenges for the operate and its responsibilities in organizations to address the new trends. At a sensible level, it's a requirement to anticipate and indurate the seemingly challenges that are sequent to the immensely hyperbolic competition owing to speedy development of technology, especially, the impact of IT, and internal necessities”. With technology up gradations, new breed of ‘knowledge workers’ in ‘learning organizations’ can create the differentiation. This intellectual capital can demand abundant nurturing from the enterprise, so as to present back within the form of superior results.

[20] Cbrales, Real, Valle, (2011) incontestable that “there is direct association of choice and appraisals practices and each dimensions of human capital with learning. Moreover, biological process practices are related to the worth of human capital, and therefore the choice and appraisal practices are associated with uniqueness”.

[21] Baldini (2005) assessed the role of human resources (HR) policies, practices in fostering data sharing (KS), institutional learning and alter (ILAC) within the CGIAR. It's supported interviews and reviews of 60 minutes documents. variety of common 60 minutes policies and practices were found that is classified into six broad classes like Leadership and strategy, organization, staffing, learning and employees development, performance management, rewarding. Whichever approach adopted, 3 factors sway be crucial for success: high leadership support, robust internal communications and an acutely aware and formal link to the organization's strategy.

[22] Green (2006) rumored that organizations that vertically aligned and horizontally integrated operate and practices performed higher and made a lot of committed and glad operate workers UN agency exhibited improved individual and structure performance and so conjointly contributed to the educational of the organization.

[23] Bhatnagar and Sharma (2003) centered on the empirical analysis of strategic roles and structure learning capability. They showed that strategic roles and structure learning capability are absolutely associated with one another and therefore the business partner role of will associate absolutely with the educational capability of the managers, so establishing Associate in nursing empirical link for variables that had solely an abstract relationship.

[24] Budhwar and katou (2003) found that policies of achievement, training, promotion, incentives, benefits, involvement and health and safety are absolutely associated with learning organization.

[25] Greer (2001) showed that the functions are a very important think about a company learning and conjointly in its performance effectively. So there study contributes to the speculation of strategic HRM, wherever it tries to prove however strategic roles are connected conceptually and by trial and error to learning organization capabilities at the social control level.

[26] McCracken and Wallace (2000) prompted that active leadership from high management is important to maximizing the returns from. However, it's necessary that senior managers scan their operative environments ([27] Maxwell, 2004), that in turn is achieved through the aptitude of learning organization.

[28] Delaney and Huselid (1996) found that practices that are in harmony with high involvement of strategy, like extremely selective staffing, compensations, and trainings, were absolutely coupled to learning organization and performance.

[29] Huselid (1995) studied "high involvement of practices to be powerfully and absolutely coupled to varied measures of learning organization and performance, together with work attachment, firm money performance, and productivity".

[30] Barney (1992) showed that "HR systems could contribute to the capability of the organization to find out by facilitating the event of organization-specific competencies. HRM is seen as personnel management with a stress on the acquisition, organization and motivation of human resources ([31] Amstrong, 2000)".

[32] Senge, (1990) delineated that HRM is capable to supply varied ways in which to assist folks inside the organizations to attain 5 disciplines -- "Personal mastery", "Mental models", "Building shared vision", "Team learning" and "System thinking". Some helpful methods for HRM to play a replacement role are listed below:

- i.) Personal mastery: Since HRM is additionally chargeable for hiring workers, it'd be necessary to search out if the new workers are actually love their jobs and willing to find out things from their jobs. Recruiting people that have a positive operating perspective can profit the organization to make an improved culture.
- ii.) Mental models: For the aim of coaching their minds, HRM will give folks with atomic weight categories. Additionally, honest rewarding systems are necessary for encouraging workers to be a lot of openness and positive to things and to colleagues and willing to adopt new challenges.
- iii.) Building shared vision: For the aim of building shared vision, HRM must give two-ways communication flows and issue company newsletters in order that folks are going to be easier to carry shared visions of future with commitments and mutual understandings.
- iv.) Team learning: For the aim of team learning, HRM must give on-the-job coaching categories and holding cluster activities or attention-grabbing comes to present folks probabilities to figure and to find out along.
- v.) System assuming: For the aim of serving to folks think a lot of consistently, HRM must produce pointers of general problem-solving procedures to workers.

3.2 Learning Organization And Organizational Effectiveness

[33] Chi (2010) explored "the effects of learning organization practices on commitment and effectiveness in Taiwanese little and medium-sized enterprises (SMEs). The results prompt that learning organization practices is viewed as a very important antecedent issue for structure commitment, further as for effectiveness of the organization. It's a moderately positive association with structure effectiveness and a powerfully positive relation with structure commitment. Moreover, the link between commitment and

effectiveness is reciprocal however not equal. Organization commitment features a moderately positive impact on effectiveness; but, structure effectiveness features a weak positive influence on commitment”.

[8] Aydin and Ceylan (2009) ascertained that a company that features a high level of LO could have higher level of worker satisfaction which can successively improve the money and growth performance of such a company resulting in positive effectiveness within the organization. Also, a company with high level of LO would have abundant data resources embodied in its workers and embedded within the organization. It's thus essential for high management and managers to put larger stress on data creation and data sharing through numerous means that to encourage learning activities that successively may contribute to improvement of the organization's innovation capabilities and competitive advantage.

[34] Zink (2008) analyzed that however the educational Organizations will drives organization effectiveness. The most theme of Learning Organizations is that the productive organizations should frequently adapt to and conjointly learn thus on reply to changes absolutely within the setting and grows.

[35] Harris, Mowen, and Brown, (2005) indicated that learning orientations features a robust influences on employee's satisfaction with the task and their talents to brazenly accepts the challenges and commitment towards the organization that results in organization effectiveness.

[36] Hasan (2006) studied that organizations with a powerful learning orientation usually have a simpler educational program in system (IS) implementation and their effective educational program, in turn, drives higher user satisfaction and overall IS effectiveness, as in it contributes to the organization effectiveness.

[37] Lopez, Peon, and Ordas (2006) examined the linkage among practices supported high performance, learning organizations, and therefore the business performances. However, they detected that practices supported high performance had a positive result upon organizations learning. Therefore, per Lopez ended that it's important to clarify regarding learning organizations and organizations effectiveness.

[38] Farell and Movando (2004) proven that learning organizations conjointly results in effectiveness and originality.

[39] McDonald (2002) argued that learning prospects features a robust influence on the originality of Associate in Nursing business person for little and medium sized companies. Also, it absolutely was expressed that learning organization makes business process reengineering (BPR) easier for organizations effectiveness.

[40] DeLone and McLean (2003) studied on learning organization (LO) and its impact on effectiveness. It's found that once there's a powerful learning culture inside a company, companies will simply face the new challenges. Learning organization affects the performances of its worker and satisfaction with the introduction of latest technology and its implementation.

[41] Murray & Donegan (2003) examined the linkage between learning organization practices and structure effectiveness helps folks discover why issues are seen in an

exceedingly one-dimensional framework, motility queries of the present systems and difficult and questioning paradoxes as they occur.

[42] Lindley and Wheeler (2001) studied that a once organization is in a position to find out quicker than it's solely property competitive advantage over different competitors and so to the structure effectiveness and it is also a challenge for the assumptions of business organizations theories.

[43] Slater & Narver (1995) ascertained that due to the inherent flexibility, learning-oriented organizations are ready quickly to reconfigure their design and apportion their resources to target emerging opportunities and effectiveness.

3.3 HRM Practices and Organization Effectiveness

[44] Jahanian and Nawaz (2012) examined the result of HRM on the productivities of the organizations manner otherwise Human Resources variables help a company to attain its objective in a good way. Here, the main focus is on seven basic variables of HRM that embody incentive pay, achievement and choice, work teams, employment security, versatile job assignment, skills coaching and communication. The target of the analysis is to search out however these variables operate among four completely different banks chosen; 2 personal sector banks and 2 public sector banks. Workers have opinions regarding different variables; but, the variables that contribute most to the productivity are achievement and choice, skills coaching and job security, that results in the effectiveness of the organization.

[45] Chee Hong and Zheng (2012) known that a good HRM practices specifically worker authorization, coaching and development, appraisal system compensation becomes the most issue for the success of a company on the retention of the staff that is a very important issue for the effectiveness in a company. For this study, Quantitative knowledge was collected victimization the non-probability self-administered form. It absolutely was found that, coaching and development, appraisal system compensations are vital to worker retention except worker authorization.

[46] Dyer and shafer (1998) based that in recent years, strategic human resource management (SHRM) has return a protracted method. Also, the domain incorporating and connecting human resource strategy (HRS) and structure effectiveness (OE) is important as a theoretical and empirical "black box". They need done Associate in Nursing current analysis on people in a company that is agile in nature thus on peer into this "black box" and draw implications for future analysis. Re-conceptualizing of OE, incorporating of the structure capabilities, having a way broader read of HRS, and assessing the vertical and horizontal alignment of activities consistently were a number of the most recommendations.

4. CONCLUSION

After careful analysis and study of previous researches, it can be said that satisfaction of an employee is of utmost importance when it comes to achieving the objectives of an

organization because that is only realized when an organization's workforce is interested in learning new processes or policies and work with their whole heart for the organization. It is observed that the need of learning new processes or policies arises with the advancement in technology. And when the process of imparting new skills, policies and training is provided to an employee, it initiates a cordial learning environment within an organization. The intellectual capital so developed will be requiring abundant nurturing from the organization and which will ultimately help the organization to succeed. Thus, having a learning environment and maintaining it is very essential for human resource management and development of an organization. Also, the appraisal practices for an employee have a greater influence on the learning environment within an organization. Studies conducted within the CGIAR shown the role of human resources (HR) policies, practices in fostering data sharing (KS), institutional learning and alter (ILAC). It can also be stated that organizations which are vertically aligned and horizontally integrated, is successful in imparting education to its employees because of which they tend to feel happy and are committed towards their organization. Thus, the individual and firm performance is improved as well maintaining a learning environment in an organization. Studies have revealed that the HRM policies of achievement, training, promotion, incentives, benefits, involvement and health and safety are certainly dealing with learning organization. Also, organizations which are having greater involvement of HRM practices like extremely selective staffing, compensations given to employees, and trainings provided, were certainly related to a learning organization and much higher performance from its employees. Furthermore, it is observed that HRM practices of selective hiring, strategic coaching, worker participation in deciding, and contingent reward will increase the flexibility of the organization to learn.

Studies have depicted that the higher employee satisfaction is the result of a learning environment in an organization which helps in maximizing the profits, thus contributing to organizational effectiveness directly. A lot of competition is prevailing in today's environment, so it is important to maintain originality in an organization, which comes through learning organization, eventually a network of whole new ideas, procedures, and policies is started leading to innovativeness amongst the employees of an organization. The commitment of the employees will also be strengthened, which ultimately leads to organizational effectiveness. Studies have revealed that learning organization is very important for commitment from the employees and also for the effectiveness of the organization. Organization commitment features a moderately positive impact on effectiveness; but, structure effectiveness features a weak positive influence on commitment. Also, with the high level of learning environment within an organization, there are high levels of profits in terms of growth and money generation for an organization resulting in a positive effectiveness within an organization. It is expressed that learning organization makes business process reengineering (BPR) easier for organizations effectiveness. Also, it is important to state that in a learning oriented organization, they are far more flexible in adapting to changing needs and grabbing

opportunities, can reconfigure their designs accordingly leading to effectiveness within an organization.

Because of the prevailing high competitive environment, it is important for an organization to utilize its human resources most effectively so as to have an edge over others and also organizational success and effectiveness as a whole. Dedication from the employees is required to achieve organizational objectives and goals. Researches have suggested seven basic variables of HRM practices that include incentive pay, achievement and choice, work teams, employment security, versatile job assignment, skills coaching and communication. It can be concluded that the variables influence of variables like achievement and choice, skills coaching and job security have much higher positive results for an organization. It is important to measure the retention capacity of an organization i.e. how many employees are staying with the organization for a long term. Measurement of which directly depicts the extent of positive organizational effectiveness. And to achieve higher level of retention within an organization, it absolutely was found that, coaching and development, appraisal system compensations are vital to worker retention, leading to an effective organization. It can be stated through various previous researches that the organization effectiveness depends largely on the innovation, adaptability and speed, which are the parameters of the intellectual employees within an organization, leads to higher organizational effectiveness.

Finally, it is concluded that best of HRM practices are vital for creating a learning organization and a learning organization will help in depicting the extent of organizational effectiveness. When the HRM practices are strategically aligned with the individual needs and organizational needs, mutual benefit is sought at ease. Employee's feels connected to the organization and puts their maximum effort in achieving short term and long term targets of its organization. Thus, in the whole process, organization effectiveness is achieved with the help of the satisfied employees who are working in the benefit of the organization. Evidences from the previous researches prove that the variables like HRM practices, LO and OE are having common grounds and the success of one helps in achieving the other and vice-versa.

5. RECOMMENDATION AND SUGGESTION

It is recommended that In order to have learning environment within the organization, HRM practices must include recruitment of individuals who are willing to learn new ideas, approaches of doing a particular task, who are flexible enough according to different situations. They should have a positive and lively attitude towards their job or task assigned to them. It should be the sole responsibility of the high level employees, subordinates and superiors that they must encourage an environment where the new ideas are welcomed and are appreciated as well. The employees must feel free to suggest their views and decisions on a particular subject. They should be given enough liberty at least to make decisions regarding their own job profiles. HRM should also concentrate on grievance handling procedures for the employees and these matters should be taken more

seriously and resolved with objectivity. These steps will surely help in bringing a cordial learning environment leading to organization success.

It is required from the senior managers that they must be able to scan their environment so as to grab the emerging opportunities in the benefit of the organization. This requires them to have an aptitude and skill of taking right decisions at the right time. This will also help in bringing maximum returns on investments made by the firm. Previous studies have also suggested that the introduction of techniques like selective hiring, strategic coaching, worker participation in deciding, and contingent reward will increase the flexibility of the organization to learn. HRM must be able to find out the organization specific competencies and must be able to motivate its employees enough to achieve the desired targets. It is also well stated in the studies that a learning organization will have abundant data resources within an organization and it is thus the responsibility of high level managers to have a healthy environment wherein the sharing of the data is done and data creation new techniques are designed and implemented by its intellectual employees.

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Design Of ARM 7 Processor Core With Constraint Of Power And Area Consumption Using FSM Modelling And Random Logic Method

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1 st	Sowmya Bhat	Assistant Professor Department of Electronics & Communication Engg. Shri Madhwa Vadiraja Institute of Technology & Mgmt., Bantakal, Karnataka, India
2 nd	Kusuma Prabhu	
3 rd	Aruna M.S	
4 th	Avinash N.J	

Abstract

Nowadays, embedded system requires all the components to be integrated into a single chip, called SOC. Embedded system consists of both hardware and software components which works together in order to perform a specific function. A soft core processor is a central component of such an embedded system which is defined in software and can be synthesized in a programmable hardware. As the complexity of the system increases, it requires optimizing its processor's parameter values. The process of optimization is a challenging task for a designer in order to meet the major market trade-offs – Cost, Functionality and Time to Market. A designer will be a winner in embedded market when a right product is produced at the right time at the right cost. In this project, a methodology for reducing the power consumption and area of the processor core according to the application requirement by designing the controller unit of ARM7 soft core processor using random logic method and finite state machine modelling is proposed. This approach is evaluated on ARM7 processor core design using Xilinx ISE9.1i for synthesis and Modelsim SE for simulation using VHDL programming language to show the average area and power consumption savings.

1. INTRODUCTION

Embedded systems play a vital role in our day to day lives. Embedded systems are nothing but the hardware and software components working together to perform specific application. The embedded system design is now becoming increasingly difficult due to market constraints on area usage, size, power consumption and performance. As the complexity of embedded system design increases, designing of each and every hardware component of an embedded system from the scratch is difficult due to time to market constraint. It is also impractical and expensive. Hence the alternative is to use predesigned or pretested intellectual property cores. Soft core processors are the microprocessors whose architecture and behavior are described using hardware description language. The designer feels comfort in using the soft core processor since it is advantageous over custom designed processors in many ways that is in terms of cost, flexibility, technology and ease of understanding of design. However, soft core processors have the disadvantages of reduced processor performance, higher power consumption, and larger size [1].

Soft cores, such as Altera's Nios II and Xilinx's Micro Blaze and Pico Blaze processors [2], use existing programmable logic elements from the FPGA to implement the processor logic. It is of great concern to build ARM soft processor cores in the context of FPGA based multiprocessor based SOC applications. ARM architecture is considered to be market dominant in the field of mobile phones and several other embedded applications. The ARM processor has been specifically designed to be small to reduce power consumption and extend battery operation [3]. In this paper, a methodology for reducing the power and area of ARM7 soft core processor is proposed, in which the controller unit is designed using Finite State Machine modelling and random logic method in order to reduce the total power consumption and area utilized by the processor respectively. Initially an 8-bit ARM7 processor core is designed and later 32-bit ARM7 processor core is designed using Xilinx ISE9.1i.

2. PROBLEM FORMULATION

Embedded systems must be specifically designed to be small to reduce power consumption and extend battery operation essential for applications such as mobile phones and Personal Digital Assistants (PDAs). High code density is another major requirement since embedded systems have limited memory due to cost and/or physical size restrictions. High code density is useful for applications that have limited on-board memory, such as mobile phones and many embedded system applications. In addition, embedded systems are price sensitive and use slow and low-cost memory devices. For high-volume applications like digital cameras, every cent has to be accounted for in the design. The ability to use low-cost memory devices produces substantial savings. Another important requirement is to reduce the area of the die taken up by the embedded processor. For a single-chip solution, the smaller the area used by the embedded processor, the more

available space for specialized peripherals. This in turn reduces the cost of the design and manufacturing since fewer discrete chips are required for the end product.

3. RELATED WORK

In order to generate a dedicated soft core processor, embedded system designer adopts either hand-made application or automated design flow methodology [4]. Applications like image processing, video processing, digital processing, and etc demand high speed execution due to growing complexity of embedded system design. The execution of these applications is increased by new multimedia instructions which are based on hand-made application [5, 6, 7].

Automated design flow methodologies involve either designing the soft core processor from the scratch or reusing the existing processor core [8]. The first approach involves designing a fully dedicated processor based on complete description of its instructions and resources using a hardware description language. It suffers from the major drawback that is time to market constraints since its design and verification takes long time. The second approach, reuse of the existing processor core overcomes time to market constraint as this approach uses the processor with already present instructions and resources within it. It just adds some custom instructions to the existing processor.

Generally, reusable components are in the form of IP cores [9] which helps in building larger or more complex blocks from a standard logic block. Based on flexibility and level of optimization these IP cores are classified as soft core, hard core and firm core. Soft core provides the behavioural description. It allows many core parameters to be changed prior to synthesis, thus providing the highest flexibility. Firm core provides the structural description with gate level net list suitable for placement and routing. Hard core provides the physical description with little or no flexibility. The physical description is provided in any physical layout file formats. Some custom instructions are added to the existing processor while employing the reuse approach. A C compiler tool [10] targets a new instruction set GCC and LCC are the two free C compilers used. GCC, originally named as GNU C Compiler is a huge, complex and gold standard for embedded system compiler which is used to build several free Operating Systems (OSs) and Real time Operating Systems (RTOS) accomplished by various C runtime libraries, assemblers, linkers and debuggers. On the other hand, LCC originally named as Local C Compiler/Little C Compiler is a small and simple compiler. The big drawback of LCC is it is not GCC. It is incapable of compiling most of the interesting open source software, including GCC's C runtime libraries, because this code tends to make use of either C++ and/or GCC extensions. A compiler must understand to write a correct program for machine which is accomplished by Instruction Set Architecture [11]. This Instruction Set Architecture is either domain or application oriented. The former is used widespread for high performance architecture suitable to optimize instruction set applications. Optimizing a specific application requires some highly tailored instructions which are attained by the later one. The growing complexity of the embedded system design demands the

optimization of different parameter values in order to meet the constraints on time to market, power, area, etc. There are several ways to reduce the area and power of the soft core processor [4] as shown in the Figure 1.1.

The most efficient way is based on the complete description of the processor core which is nothing but designing a fully dedicated architecture. This approach suffers from the drawback of time to market constraint and lack of flexibility. However the drawback of time to market constraint can be overcome by reusing the processor core. Digital signal processors and general purpose processors offers high computation speed, but the general processors are not preferred in the embedded market. Another approach is to use programming languages and compiler tools providing high flexibility.

One more efficient way to reduce area and power of the processor core is the use of Application Specific Instruction set Processor which combines design, flexibility and time to market. This approach improves the performance of the processor in terms of its throughput and latency. It will adapt the low cost general purpose processor core along with the addition of domain specific instructions.

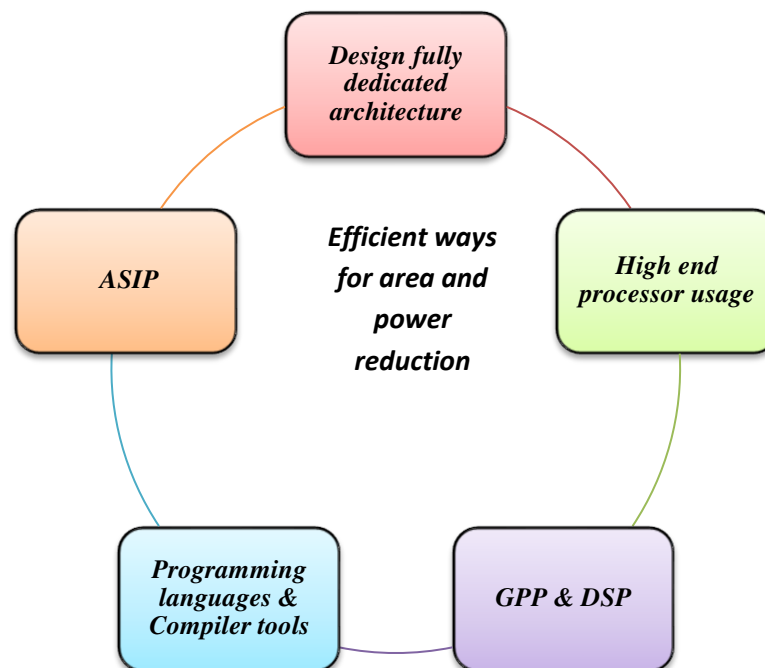


Figure 3.1: Efficient ways for area and power reduction

The designer feels comfort in using the soft core processor since it is advantageous over custom designed processors in many ways that is in terms of cost, flexibility, technology and ease of understanding of design.

4. PROPOSED METHODOLOGY

As a solution to the above problem, a methodology is proposed in order to reduce the area and power consumption of the ARM7 soft core processor. The controller for ARM7 core is implemented with random logic method, where the required controlled signals are

generated by pure combinational logic and Finite State Machine Modelling. This method is chosen to enable the ARM7 core to work at higher clock speeds and to reduce the power consumption respectively.

The other reasons why random logic method is suitable [3] here are: Random logic based controller results in lower instruction decoding results and hence makes the ARM7 core to work at higher clock frequencies, since here a subset of instructions is chosen for implementation random logic based controller is not a big area overhead. If it is the full ARM7 core instruction set then lot of area will be taken by controller itself if random logic method is used and the chosen implementation method is based on single cycle implementation in which the random logic based implementation is very convenient. It is to be understood that in multi cycle implementation the micro coded instruction decoder implementation is more suitable.

It is of great concern to build ARM7 soft core processor in the context of FPGA based multiprocessor based system on chip applications. The ARM7 processor has been specifically designed to be small to reduce power consumption and extend battery operation. It consists of the following components: Accumulator (AC), Adder/Subtractor, Instruction Register (IR), Instruction Register Decoder (IR Decoder), Base Register (B Register), Offset Register (O Register), Program Counter (PC), Memory Address Register (MAR), Controller Unit (CU), Read Only Memory (ROM)

4.1 Architecture Design of ARM7 Processor Core

The above mentioned components of ARM7 soft core processor is shown in Figure 4.1 illustrating the block diagram for architectural design of ARM7 Processor Core along with the importance of each component.

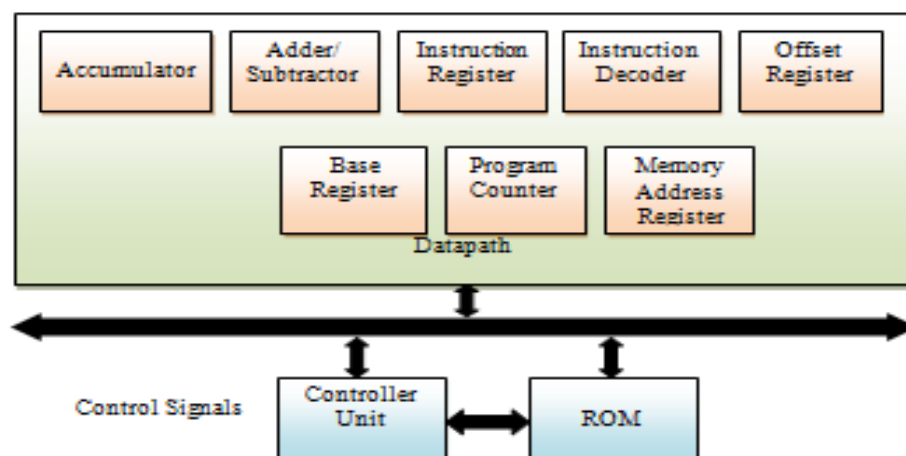


Figure 4.1: Block Diagram of Design of ARM7 Processor Core

4.2 Methodology to Reduce Area and Power Consumption of ARM7 Processor

In this paper, a methodology to reduce the area utilized and power consumed by the ARM7 processor core. For any processor, control unit is the heart, controlling all the operations. Here also controller plays an important role in the ARM processor as all the operations performed by the blocks of data path and ROM is controlled by it. For the

instruction execution, the control unit generates the control signals to each and every block of the data path. In this paper, ARM7 processor core's control unit is designed using random logic method in order to generate pure combinational logic control signals in order to make the ARM7 processor core work at higher clock speeds resulting in lower instruction decoding . Instead of full ARM7 core instruction set, here only a subset of instructions is chosen for designing random logic based controller. Hence it is not a big area overhead. Full ARM7 core instruction set utilizes a lot of area if random logic method is used. Also the chosen method is based on single cycle implementation in which the random logic based implementation is very convenient. It is to be understood that in multi cycle implementation the micro coded instruction decoder implementation is more suitable.

In this paper, the control unit is also designed by using simple finite state machine modelling. The transition from one state to other depends on the logical states of LDA, ADD, SUB and O as shown in Figure 4.2. Signals from the control unit are connected to every component in the processor to supervise its operation.12 states are included in state machine modelling with one hot encoding technique in which each code word has exactly one 1 bit with the remaining bits 0 as shown in the below Table 4.1. The advantage of a one-hot code becomes clear when we want to test whether the encoded multi bit signal represents a given value; we just test the single-bit signal corresponding to the 1 bit in the code word for that value which in turns saves the time and also one of the key advantages of using FSM modelling is that we can utilize the low power features of the processor to reduce the power consumption. For example, we can put the processor into halt mode when no processing is required. Thus by using these two techniques that is, random logic method and finite state machine modelling, area and power consumption can be reduced respectively.

Table 4.1: Operation of Control Unit

State	Encoding											
	cp	Ep	lm	ca	l	ci	la	ea	cu	ex	lb	lo
s0	0	0	0	0	0	0	0	0	0	0	0	1
s1	0	0	0	0	0	0	0	0	0	0	1	0
s2	0	0	0	0	0	0	0	0	0	1	0	0
s3	0	0	0	0	0	0	0	0	1	0	0	0
s4	0	0	0	0	0	0	0	1	0	0	0	0
s5	0	0	0	0	0	0	1	0	0	0	0	0
s6	0	0	0	0	0	1	0	0	0	0	0	0
s8	0	0	0	0	1	0	0	0	0	0	0	0
s9	1	0	0	0	0	0	0	0	0	0	0	0
s10	0	1	0	0	0	0	0	0	0	0	0	0
s11	0	0	1	0	0	0	0	0	0	0	0	0
s12	0	0	0	1	0	0	0	0	0	0	0	0

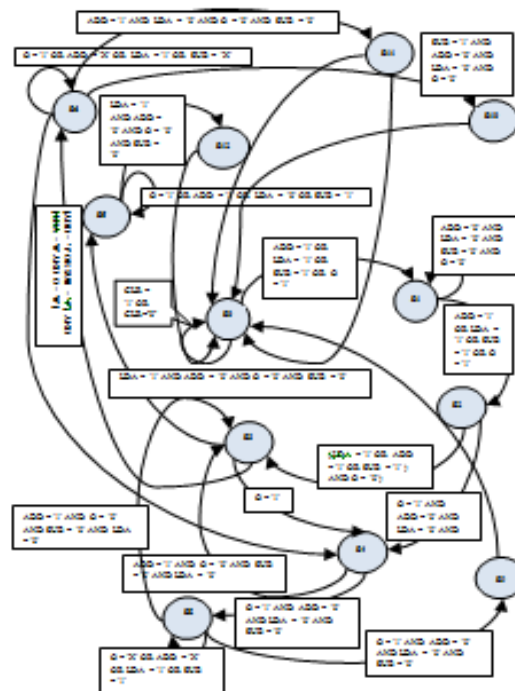


Figure 4.2: Finite State Machine Modelling

When the processor operation is not required it can be simply put to halt mode so that the power consumption constraints are met.

4.3 Design of ARM7 Soft Core Processor Using Xilinx ISE9.1i

The RTL (Register Transfer Logic) can be viewed as black box after the design synthesis. It shows the inputs and outputs of the system. By double-clicking on the diagram we can see gates, flip-flops and multiplexers. Here in the below schematic Figure 4.3, that is, in the top level schematic, shows all the inputs and final outputs of ARM7 processor core design.



Figure 4.3: RTL Schematic of ARM7 Processor Core with basic inputs and outputs

The internal blocks available inside ARM7 soft core processor design includes accumulator, adder/Subtractor, instruction register, instruction register decoder, base register, program counter, offset register, memory address register, Read Only Memory (ROM) and control unit which are clearly shown in the schematic level diagram in Figure

4.4. Inside each block the gate level circuit will be generated with respect to the modelled HDL code as shown individually in the below schematic representations.

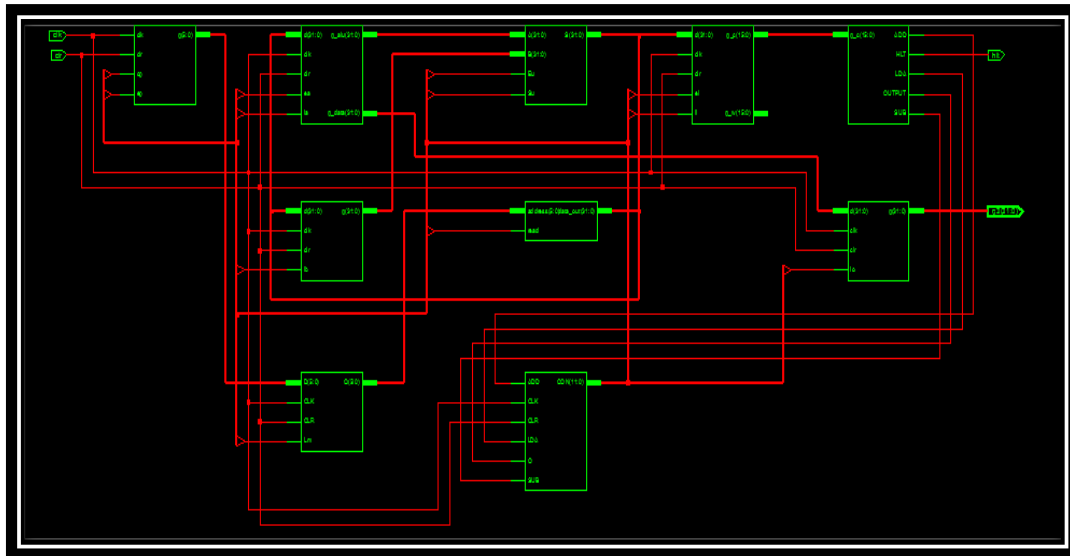


Figure 4.4: Blocks inside the Developed Top Level ARM7 Processor Core Design

5. RESULT AND CONCLUSIONS

Initially an 8-bit ARM7 processor core is designed and final simulation waveform for 8-bit ARM7 processor core bit are shown.

5.1 Simulation Results of ARM7 Soft Core Processor

Simulation waveform of 8-bit input ARM7 soft core processor is as shown in the below Figure 5.1.1.

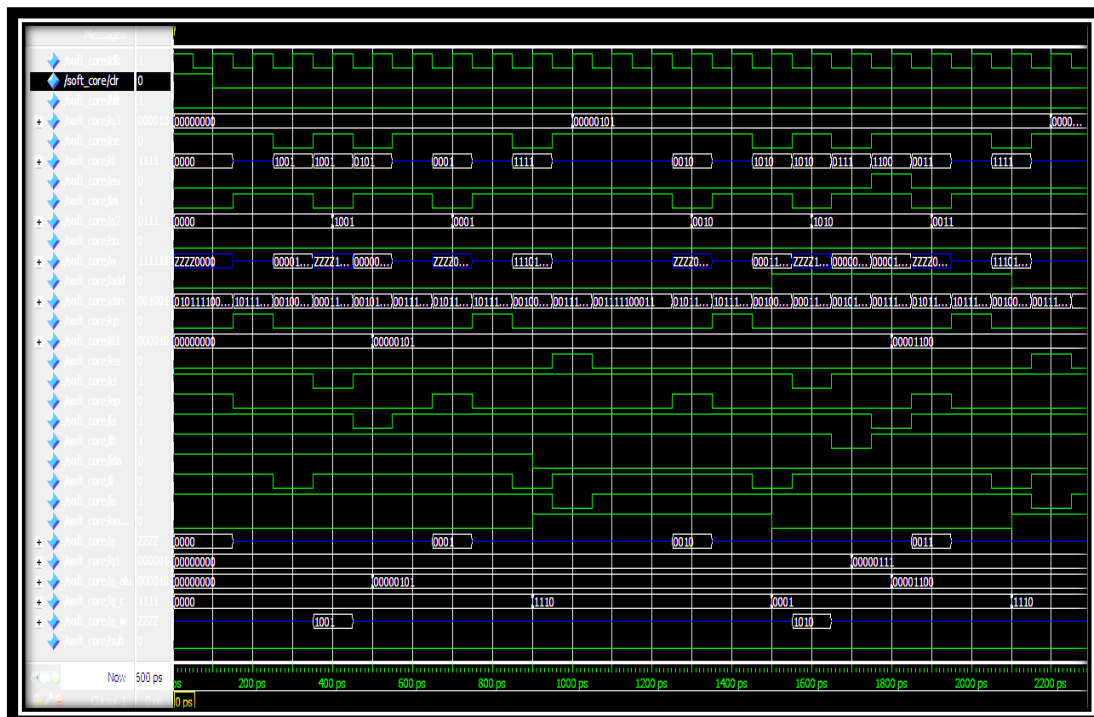


Figure 5.1.1: Simulation waveform of 8-bit ARM7 processor core

5.2 Synthesis Result

The developed ARM7 soft core processor is simulated and verified for its functionality. Once the functional verification is done, the RTL model is taken to the synthesis process using the Xilinx ISE 9.1i tool. In synthesis process, the RTL model will be converted to the gate level netlist mapped to a specific technology library. Here in this project, Virtex family has been chosen. Many different devices were available in the Xilinx ISE tool, in order to synthesis this design the device named as “XCV800” and the package as “BG560” with the device speed such as “-4” has been chosen. The design of ARM7 soft core processor was synthesized and its results were analyzed as follows.

5.3 Device Utilization Summary

This device utilization includes the following:

- Logic Utilization
- Logic Distribution
- Total Gate count for the Design

The device utilization summary is shown in the below Figure 5.3.1, in which it gives the details of number of devices used from the available devices and also represented in %. Hence as the result of the synthesis process, the device utilization in the used device and package is shown below.

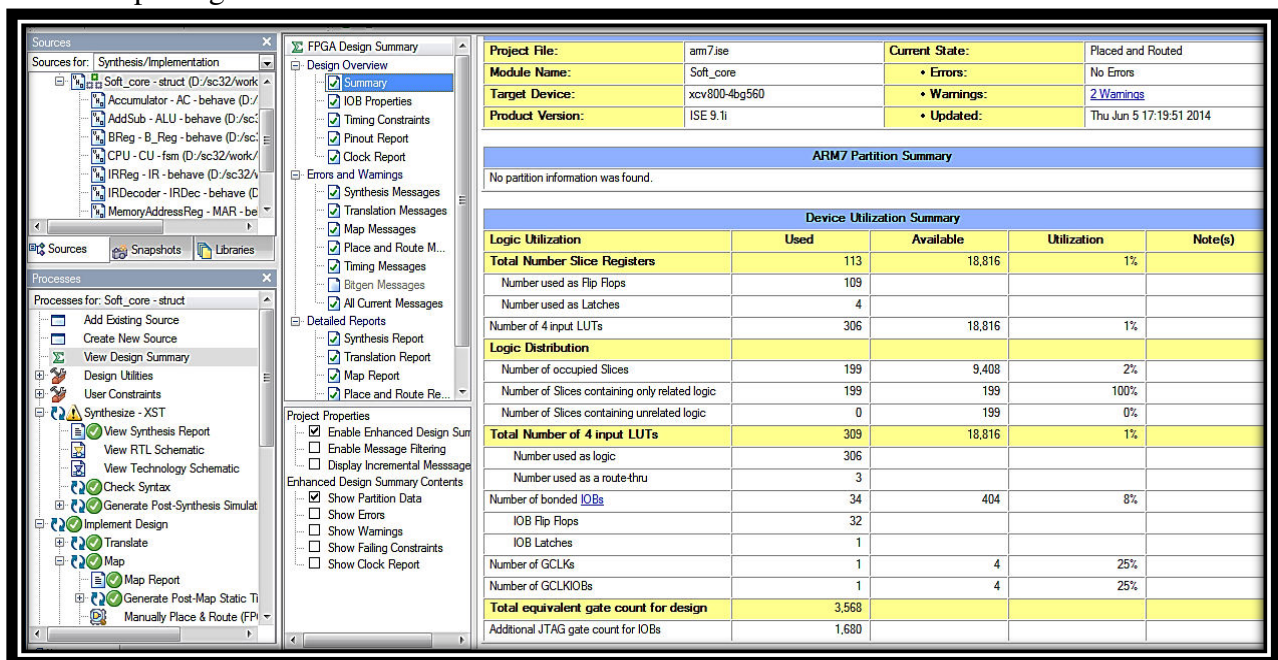


Figure 5.3.1: Device Utilization Summary

From the device utilization summary, it is clear that out of 18816 slice registers 113 slice registers are utilized. Out of 18816 available total number of 4 input LUTs, 309 LUTs are utilized. The total equivalent gate count for design is estimated to be 3568. In other words, the percentage utilization of slice registers and total number of 4 input LUTs is only 1%

which indicates that area utilized by ARM7 soft core processor is very less and hence it can make more space for specialized peripherals.

5.4 Timing Summary

Speed Grade: -4

Minimum period: 24.762ns (Maximum Frequency: 40.384MHz)

In timing summary, details regarding the time period and frequency is shown are approximate while synthesizing. After place and routing is over, the exact timing summary is obtained. Hence the maximum operating frequency of synthesized ARM7 processor core design is 40.384MHz and the minimum period is 24.762ns.

5.5 Power Summary

The power report for the designed ARM7 soft core processor is as shown in the below Figure 5.5.1. From the Xilinx power report, the total power consumption and the current is estimated to be 7mW and 2mA respectively.

Release 9.1i - XPower Software Version: J.30 Copyright (c) 1995-2007 Xilinx, Inc. All rights reserved. Copyright (c) 1995-2007 Xilinx, Inc. All rights reserved.		
Design:	E:\Users\compaq\Desktop\main project\arm7\Soft_core.ncd	
Preferences:	Soft_core.pcf	
Part:	v800bg560-4	
Data version:	PRODUCTION,v1.0,05-28-03	

Figure 5.5.1: Power Summary

5.6 Comparison between Datasheet of ARM7 Soft core Processor and Proposed Method Results

The simulation results obtained for the design of ARM7 soft core processor is compared with the available datasheet [15] of ARM7 as shown in Table -2.

Table -2: Comparison between Datasheet and Proposed method

Parameters	Datasheet	Proposed Method
Maximum Frequency (in MHz)	25	40.384
Voltage (in V)	3	3.3
Current (in mA)	15	2
Pipeline	3 stages	3 stages
ISA	32-bit RISC	32-bit RISC
Total Power Consumption (in mW)	45	7
Area	-	309 LUTs

The maximum frequency range has increased from 25MHz to 40.384MHz in the proposed method. Though the frequency of operation increases as shown in the simulation result which may lead to current leakage and switching losses but it is advantageous in the sense that as the frequency of operation increases, operating time reduces and hence the speed of operation increases. The low power operation is found to be 3.3V in proposed method and the current and total power consumption is reduced by approximately 6-7 times the data available from the datasheet. The slice register and 4-input LUTs utilization is around 1% as seen in the device utilization summary. Hence it is clear that the power consumption and the area utilized by the ARM7 processor core are reduced.

The maximum frequency range has increased from 25MHz to 40.384MHz in the proposed method. Though the frequency of operation increases as shown in the simulation result which may lead to current leakage and switching losses but it is advantageous in the sense that as the frequency of operation increases, operating time reduces and hence the speed of operation increases. The low power operating voltage is found to be 3.3V in proposed method and the current and total power consumption is reduced by approximately 6-7 times the data available from the datasheet. The slice register and 4-input LUTs utilization is around 1% as seen in the device utilization summary. Hence it is clear that the power consumption and the area utilized by ARM7 soft core processor is reduced by designing the controller unit of ARM7 soft core processor using random logic method and finite state machine modelling.

In future, the design can be implemented on high end FPGA devices like Virtex4 or Virtex5 for better speeds. The power consumption and area may be still reduced by making alterations in the controller unit design. Literature provides the low power and area reduction methodology proposed for the soft core processors like Nios II, Micro Blaze, Pico Blaze and Xtensa [16] which are used for commercial purpose. In this project, low power and area reduction methodology is proposed for ARM7 processor, which can be used in educational institution as well. Hence, students could easily modify the architectural parameters and see the effects immediately in Xilinx. Such a methodology would be more educational.

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7. BIOGRAPHIES



Sowmya Bhat received the B.E degree in Electrical and Electronics Engineering and the M.Tech degree in VLSI Design and Embedded Systems. She is currently an Assistant Professor in the Department of Electronics and Communication Engineering at SMVITM, Bantakal. Her areas of interest include Power Electronics, VLSI Design and Embedded Systems. She is a lifetime member of Indian Society of Technical Education.



Kusuma Prabhu received the B.E degree in Electronics and Communication Engineering and the M.Tech degree in Digital Electronics and Communication. She is currently an Assistant Professor in the Department of Electronics and Communication Engineering at SMVITM, Bantakal. Her areas of interest include Image Processing, Computer Networks and Embedded System. She is a lifetime member of Indian Society of Technical Education.



Aruna M.S received the B.E degree in Electronics and Communication Engineering and the M.Tech degree in VLSI Design and Embedded Systems. He is currently an Assistant Professor in the Department of Electronics and Communication Engineering at SMVITM, Bantakal. He is a lifetime member of Indian Society of Technical Education.



Avinash N.J received the B.E degree in Electronics and Communication Engineering and pursuing the partime M.Tech degree in Digital Electronics. He is currently an Assistant Professor in the Department of Electronics and Communication Engineering at SMVITM, Bantakal. His areas of interest include VLSI Design, Embedded Systems, Signals and Systems and Digital Signal Processing. He is a lifetime member of Indian Society of Technical Education.

Applications Of Compressive Sensing Technique In Wireless Sensor Network

Paper ID	IJIFR/V3/ E10/ 028	Page No.	3718-3724	Subject Area	Computer Engineering
KeyWords	Wireless Sensor Network, Energy Efficient Cluster Head Selection, Data Compression, Compressive Sensing				

1 st	Deepthi N	M.Tech. Student Department of Computer Science & Engineering BMS Institute of Technology and Management Bengaluru(Karnataka)- India
2 nd	Bharathi R	Associate Professor Department of Computer Science & Engineering BMS Institute of Technology and Management Bengaluru(Karnataka)- India

Abstract

In order to reduce number of data transmission and to balance the load all over the network, the technique used is called Compressive Sensing. After using the pure compressive sensing technique the total number of transmission is too vast. So to reduce this hybrid compressive sensing method was proposed. The main intention is to decreases energy consumption and to increase the life cycle of the whole network.

1. INTRODUCTION

Now a days the wireless sensor network involved a good deal in the wireless area as a primary tool used for data gathering and monitoring for these two applications. The sensor node which is a fundamental component of this network and it is considerably controlled in energy. There are many applications which is significantly used in habitat monitoring, environmental monitoring, environmental disaster management etc. All these require only collective amount of data in order to respond to the base station. About their neighbouring region the sensors of different fields can offer accurate report.

Whatever data collected it is directly routed to the base station by using routing tree. The standard method used to get efficient and improved performance in sensor networks is called clustering. Therefore aggregation and clustering improves the reliability of the

reported measurement and decrease the communication overhead in the network. Every cluster has a coordinator reference called Cluster head CH and all nodes surrounded by CH is called member nodes. The member nodes will transfer their data to a particular CH in a program manner. Data compression technique is used in order to decreases the transport load.

There are two types of technique used to forward the data by using hybrid clustering.

- One is Intra cluster transmission.
- Other one is Inter cluster transmission.

Intra cluster transmission the nodes which are closer to the head that gather the sensed information and forward to the head. In intra cluster transmission two types of communications are used that is single hope and multi-hop. Time division multiple access in this time is equally divided and allotted. Inter cluster transmission the head node sends information to other head node in a distributed manner. Rather than selecting each and every node, select the best path. The head cluster which is closer to the destination forward information to the destination. While transferring data compressive sensing technique is used.

2. NEED FOR CLUSTERING

Every node in the cluster will collect some amount of information and sends to the base station, so energy reduction will happen, so the network is divided in to group of clusters to reduce the energy loss. In all clusters one node will be head node and the remaining nodes will be member nodes. The function of member nodes is to collect some data and to transfer that data to the head node. There are many algorithms to do clustering; the following are some of the important algorithms:

- Hybrid Energy Efficient Distribution.
- Low Energy Adaptive Clustering Hierarchy.
- Energy Efficient Dynamic Clustering.
- Mobility Resistant Efficient Clustering Approach.

According to our survey the above mention algorithms are Existing type algorithms. This are used to do clustering in an efficient and to reduce the loss of energy in the networks while transferring data to the target stations. And we have proposed type algorithm, which is used for selection of cluster head.

- Efficient Cluster Head Selection Algorithm.

3. EXISTING SYSTEM

By using compressive sensing technique in data assembly, every node wishes to forward M packets of data to an N set of data items. The number of transmissions for N data items is MN, which stay as more number of transmissions. The nodes which are in hybrid cluster near to the branch nodes forward original data without any help of compressive sensing technique. In order to achieve the effective, scalable performance clustering is one

of the approaches in wireless sensor network. The clustering algorithms targets to generate disjoined clusters to satisfy few conditions.

Disadvantages of Existing system:-

- Nodes which are near to sink forward data packets to the target stations.
- The distributions of nodes in the clusters are neglected.
- The geographical locations of nodes in the clusters are ignored.

4. PROPOSED SYSTEM

To carry out the performance of two matrices, a process is proposed with hybrid compressive sensing. To transfer data from sensor to sink, number of transmissions needed and the decreased ratio of transmissions is measured with other transmission methods. The nearby path tree will be used in order to receive information from sensor to sink; here minimum transmission tree is used. The nodes are arranged in a cluster fashion within the cluster. If size of clusters is big, the number of transmissions will increase to gather data from member nodes within cluster.

Advantages of Proposed System:-

- This proposed system have good load balancing than the tree data collection method, this happens because when we capture the cluster the nodes get balanced within the cluster. Previous work neglects the node distribution and geographical location of the nodes within the clusters.
- The plan of data collection method which will have less data transmissions and there will be a decrease in number of transmissions.

5. SYSTEM ARCHITECTURE

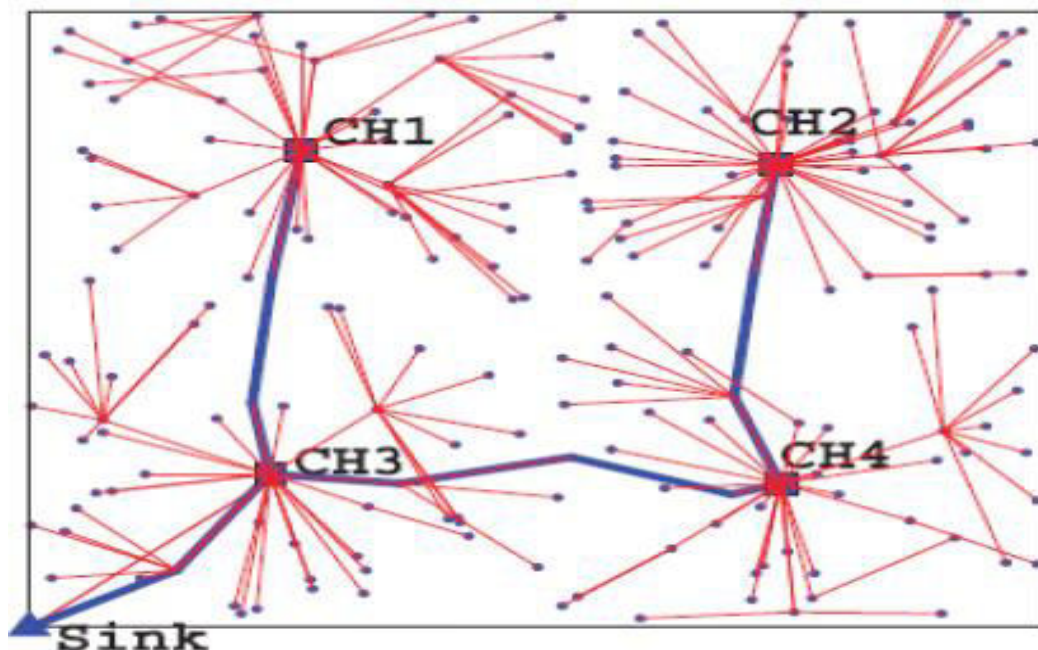


Figure 5.1: System Architecture

The Figure 5.1 shows the system architecture of clustering process which uses the hybrid compressive sensing. All the member nodes in this architecture are added to make a cluster. All clusters will contain one node as a cluster head. Cluster head will have compressive sensor than sensor nodes. This sensor reduces the number of data packets transferred and it balances the traffic within the network. Then all sensor nodes forward the collected data to cluster heads, where the cluster head compresses the data packets then it transfers to the base station.

- All nodes collect some amount of information and forward to sink so loss of energy occurs.
- Energy depletions can be decreased by dividing the network into clusters.
- In a group of nodes, the node which is having highest rating can act as an head node.
- All leaf nodes collect the data packets and forward to the head.
- The work of head node is to collect data and transmit to the destination or base station.
- But all other nodes save its energy by forward data packets to the head node.
- At last the head node finds its multi-hop rout and then transferring data packets takes place.

6. DATA FLOW DIAGRAM AND FLOW CHART

The data flow diagram (Figure 6.1) shows how the data flows takes place in the sensor network by using compressive sensing. The flow chart (Figure 6.2) shows how the data flow happens in the sensor network by using compressive sensing technique.

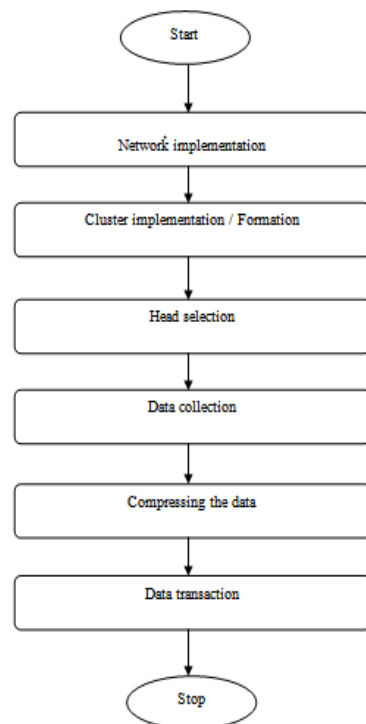


Figure 6.1: Data flow diagram

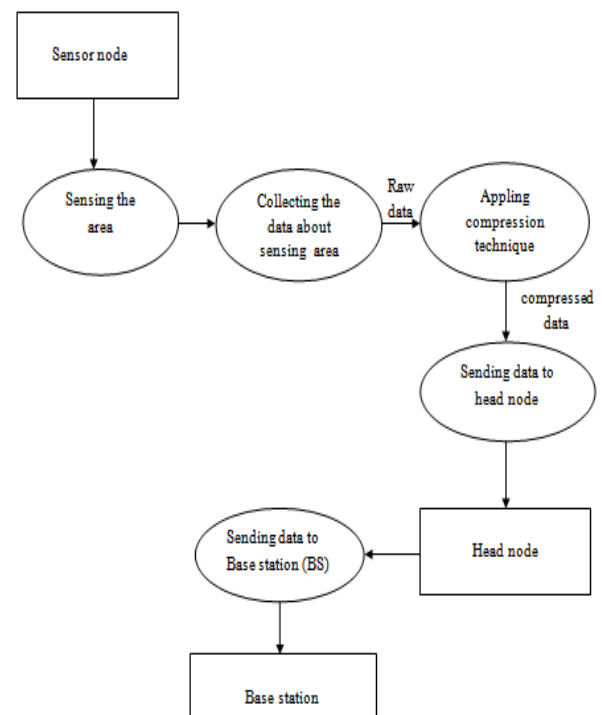


Figure 6.2: Flow chart

7. IMPLEMENTATION

In this project data compression technique is used that is first order block code, it is a part of shannon lossless source coding theorem. The implementation depends on programming language and the platform used. The implementation part is done with NS2, the version of NS2 used is NS2.2.28. and the front end works with OTcl (object oriented tool command language) . The operating system used is windows XP/7/linux.

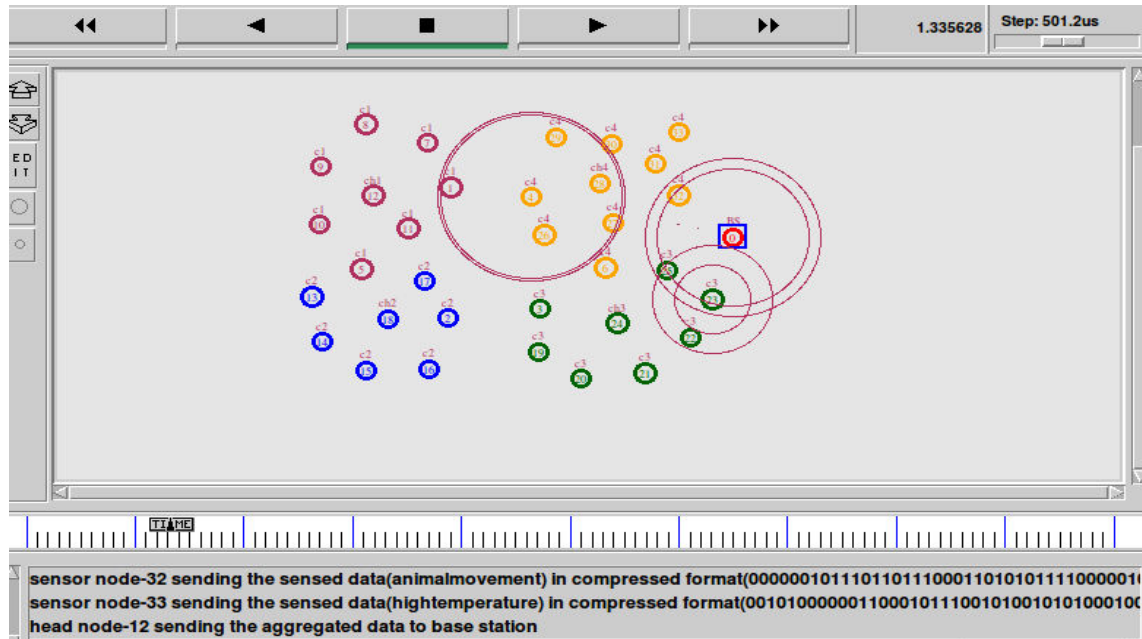


Figure 7.1: Transfer of data packets to the base station

The above figure shows simulation slide shows how the data transfers from clusters to the sink. The graphs shown in figure 7.1,7.2,7.3,7.4 is packet delivery ratio, drop of packet, energy consumption. These three graphs explains result of the simulation.

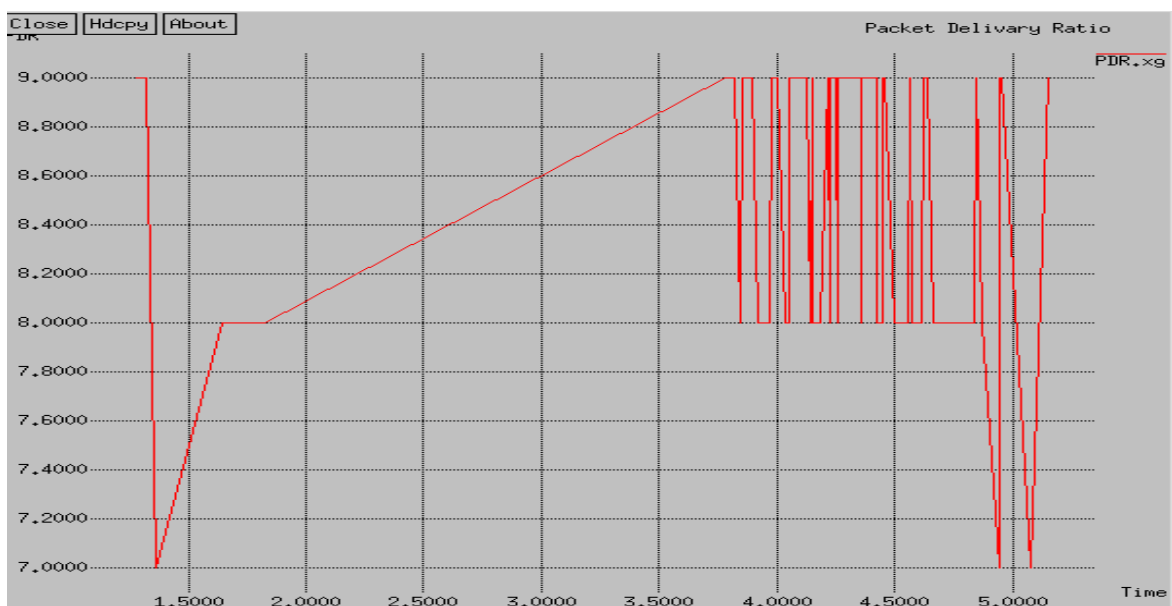


Figure 7.2: Packet delivery ratio graph

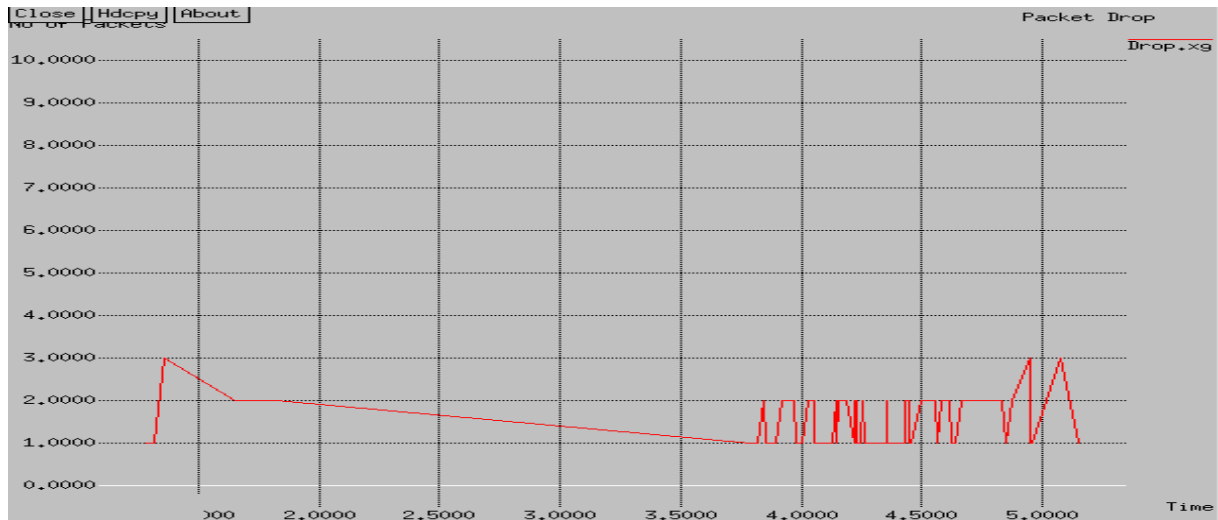


Figure 7.3: Drop of packet graph

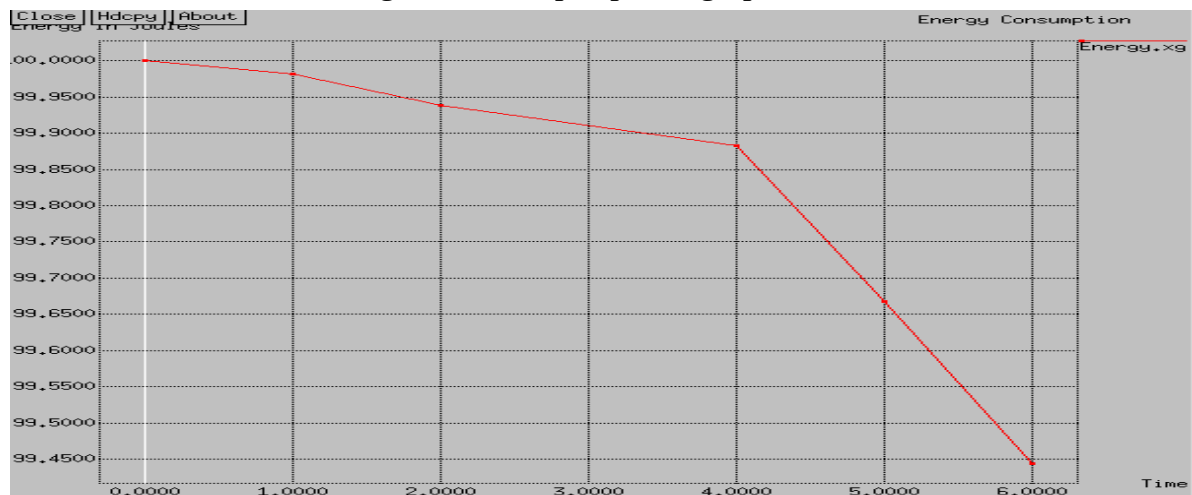


Figure 7.4: Energy consumption graph

8. APPLICATIONS OF WIRELESS SENSOR NETWORKS

- Used in defence for guarding the country.
- Used in maintenance of equipments and machinery.
- To predict weather forecasting.
- Used in environmental studies.

9. CONCLUSIONS

The wireless sensor network uses different sensor techniques in order to collect the data, sense the data, and send to the cluster head. In this project, studied the various cluster head selection algorithm for aggregation of data. All nodes collect the same amount of information and forwards to the sink, so energy depletion takes place. In order to avoid energy depletion network is divided into group of clusters and in this project energy efficient cluster head selection algorithm is used to select the cluster head and also compress the data. The main goal of doing this is to increase the life span of the entire network, by doing so the data transfer happens effectively without energy exhaustion.

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11. BIOGRAPHIES



Deepthi N received the Bachelor Of Engineering degrees in Information science and Engineering from S.J.C. Institute Of Technology, Chikkaballapur in 2010 and 2014, respectively. Now pursuing Master Of Technologies in Computer Science and Engineering from B.M.S. Institute of Technology and Management, Bangalore. Presently working on area of networking and completed the project "Applications of Compressive Sensing Technique In Wireless Sensor Network".



Bharathi R received Master of Technologies in Computer Science and Engineering & having vast teaching experience. Currently she is working as associate professor in B.M.S. Institute Of Technology. Now pursuing Ph.D. and guided the project "Applications of Compressive Sensing Technique In Wireless Sensor Network". She has attended various international conferences & published research papers in reputed international research journals.

News Communication Through WhatsApp

Paper ID

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Page No.

3725-3733

Subject Area

Journalism & Mass Communication

Key Words

WhatsApp, Mobile Instant Messaging, News, News related content

Bharti Batra

Ph.D. Research Scholar,
Department of Communication Management & Technology,
Guru Jambheshwar University of Science and Technology ,
Hisar (Haryana)

Abstract

WhatsApp with more than one billion users worldwide has become the most popular instant messaging application. WhatsApp is mainly a personal communication application. This study attempts to explore how the youth is using this personal platform for news consumption, as the contemporary era has changed the news consumption patterns. The sample consisted of 100 students. Data was collected through a personally administered questionnaire. The results show that the youth is actively involved in news affairs through WhatsApp. Most communicated news related contents are about entertainment and issue of the day. Youth opined that news related contents communicated through WhatsApp create awareness and update knowledge about current affairs and events.

1. INTRODUCTION

The contemporary era has changed the patterns of news consumption. Now-a-days people actively engage in creation and dissemination of news through online communication mediums. The credit goes to Web 2.0, which has enabled every individual to be a prod-user. The social media sites, peer-to-peer communication technologies have enabled every individual to be an active participant in news affairs. According to Pew research study, almost half of the respondents i.e. social network site users have shared news, images or videos and more than 45% have discussed a news issue or event among their online social network [1]. Hand-held devices like Smartphones have made it more viable with its powerful features and availability. Earlier also, the news was communicated & discussed

in groups, choupals and other informal gatherings. But now technological developments have shifted the interpersonal face-to-face communications to online real time communication platforms. The present study aims to explore news related communication through mobile instant messaging application WhatsApp. A report by Reuters Institute (2016) found that there is an accelerated growth towards social and mobile news. The findings revealed that 66% of the respondents are using smartphones for accessing news every week [2]. According to Jana study, 97% smartphone users in India use applications and 96% of them use WhatsApp [3]. Global research consultancy TNS reported WhatsApp ranks first among mobile instant messaging (IM) applications [4].

1.1 WhatsApp Overview

“WhatsApp messenger is a cross-platform mobile messaging application that allows exchange of messages. It is available for iPhone, Android, Blackberry, windows phone, and Nokia etc. WhatsApp users can create groups, send unlimited images, video and audio media messages” [5]. It works through internet. From its launch in 2009, upto now WhatsApp has added many more features for enhancing users’ experience. Now one can even make voice call through it or can send documents also. WhatsApp provides a lot of features and no extra charge for any feature; it just works through Internet and uses mobile/Wi-Fi data. In Feb, 2016 WhatsApp reported one billion monthly active users worldwide [6].

WhatsApp is mainly a communication application for mobile users. The communication subjects cover a wide range of topics. On WhatsApp, one comes across lots of message types including jokes, commentaries, latest news, any newspaper clipping, video or audios on different topics etc. The present research aims to know how news is communicated or disseminated through WhatsApp among WhatsApp circle. In this research, the news communication means communicating contents related to current issues/ event on WhatsApp.

2. LITERATURE REVIEW

Bowman & Willis (2003) opined that news media organizations have been story initiators in contemporary times. They cover stories and spread them to the world. “The online community retells the story, comments over it and adds additional information or overlooked angle” [7]. Thus, a variety of news and views from different minds redraft the story providing a complete picture of the event. According to Pew Survey (2010), in online communities, the news is shared more than news creation. The survey found that 72% of American news consumers follow the news because they enjoy talking about what is happening in the world. “They have done at least one of these: commenting on a news story, posting a link on a social networking site, tagging content, creating their own original news material or opinion piece, or Tweeting about news” [8].

In 2013, Karen Church & Rodrigo de Oliveira conducted a study “What’s up with WhatsApp? Comparing Mobile Instant messaging behaviors with traditional SMS” to explore the perceptions and motives of people for using WhatsApp. The study found that

WhatsApp offers cost benefits, sense of community & immediacy. WhatsApp messages are considered “more social, informal and conversational in nature and are used more in close circles and in-group communication” [9].

3. OBJECTIVES OF THE STUDY

This research study has following objectives:

- I. To know youths’ participation in news related activities through WhatsApp.
- II. To explore what kind of news content is communicated and how often.
- III. To find out impact of news communication on WhatsApp?

4. METHODOLOGY

In this research, survey method has been employed. The survey was conducted on the students of Guru Jambheshwar University of Science & Technology. Total 100 respondents were selected through random sampling. Data had been collected using personally administered questionnaire. Reference period for data collection was from November 2015 to December 2015. SPSS 16.0 is used to analyse data. Descriptive statistics has been applied. The results are presented in simple frequency and percent through tables.

5. DATA ANALYSIS AND RESULTS

The questionnaire had three sections. The first section included questions about demographic details, Section-II comprised questions related to WhatsApp usage and third section had questions related to news related contents on WhatsApp.

Section 1: Demographic details:

The survey comprised participation of 33% Graduation students, 54 % Masters Students, and 13% Ph.D. scholars. Out of total 100 respondents, there were 52 Male and 48 female respondents. 71% of total respondents reported they belong to urban area. 24% were from rural and a 5% marked rural- urban area.

Table 1: Age of the Respondents.

Variable	Frequency	Percent
15-20	23	23
20-25	58	58
25-30	17	17
30-35	1	1
Above 35	1	1
Total	100	100

As the above table shows majority i.e. 58% of the respondents are in the age-group 20-25 years. Followed by 23% in the age-group 15-20 years.

Section 2: WhatsApp Usage

This section represents responses related to questions about. WhatsApp usage.

Table 2: Using WhatsApp from

Variable	Frequency	Percent
0-6 Months	10	10%
6-12 Months	26	26%
More than 12 months	64	64%
Total	100	100

Table 2.1 shows, 64% of the respondents reported they are using WhatsApp from more than 12 months. One fourth of the respondents said they are using WhatsApp from last 6-12 months and one tenth of the respondents are using it from less than six months.

Table 3: Frequency of using WhatsApp

Variable	Frequency	Percent
Less Often	6	6%
Once in a day	7	7%
Twice in a day	20	20%
Several times in a day	51	51%
Whole Day	16	16%
Total	100	100

As presented in Table 2.2, half of the respondents reported they use WhatsApp several times in a day. One fifth reported they use twice in a day. 16% of the respondents said they are whole day online on WhatsApp. Although 7% of the respondents reported they use WhatsApp once in a day and 6% said less often.

Table 2.3: Time spent in a day

Variable	Frequency	Percent
0-30 Minutes	19	19%
30-60 Minutes	36	36%
60-90 Minutes	12	12%
90-120 Minutes	11	11%
More than 120 Minutes	22	22%
Total	100	100

Table 2.3 presents that more than one third of the respondents reported they use WhatsApp for 30-60 minutes in a day. 22% of the respondents use WhatsApp for more than 120 minutes in a day. Almost one fifth reported they use WhatsApp for 0-30 minutes. 12% respondents reported using for 60-90 minutes and 11% mentioned they use for 90-120 minutes in a day.

Table 2.4: General Purpose of WhatsApp usage.

Variable	Frequency	Percent
To Communicate with Friends	86	86%
To Communicate with Relatives	67	67%
To Maintain contacts	46	46%
To Socialize	57	57%
To Have Fun & Relax	72	72%
To Update information/ Knowledge	69	69%
All above	35	35%
Any other	5	5%

Table 2.4 shows multiple checklist questions' responses. As shown in the above table, 86% of the respondents use WhatsApp to communicate with friends. 72% reported they use Whatsapp for having fun and relaxation. Almost 70% use WhatsApp for Updating information/ knowledge. Followed by "To communicate with relatives, to socialize, to maintain contacts". One third of the respondents reported that they use WhatsApp for all above purposes.

Section-3 News related content communications through WhatsApp

This section included survey results related to communication of news related contents through WhatsApp.

Table 3.1: News related activities performed in WhatsApp circle (Responses in Percent).

A=Always, O=Often, S=Sometimes, R=Rarely, N=Never

Statement	A	O	S	R	N
Use Whatsapp for news updates.	22	20	34	15	9
Discuss about social events with your WhatsApp friends.	18	26	33	13	10
Discuss about news with your WhatsApp friends.	22	24	33	17	4
Send news related contents to your WhatsApp circle.	32	24	30	6	8
Receive news related contents from WhatsApp circle.	40	26	25	6	3

Table 3.1 shows that on an average, respondents perform all above news related activities on WhatsApp. 26.8% respondents perform above activities always, 24% Often, 31% Sometimes, 11.4% rarely, 6.8% never. Less than 7% respondents reported they never perform news related communications on WhatsApp. The results show that one fourth of the respondents always perform news related activities on WhatsApp as mentioned in above statements in Table 3.1. Almost equally i.e. one fourth of the respondents reported they often perform news related activities on WhatsApp. Although majority i.e. almost one-third respondents reported that they sometimes use WhatsApp for news related activities.

Table 3.2: Type of news related content mostly discussed in WhatsApp (Multiple Choice).

Variable	Frequency	Percent
Current news covered in the media	55	55%
Prevailing social issues	33	33%
Breaking News	36	36%
Any news in personal circle	47	47%
Any other, specify	6	6%

This question is a checklist question. The respondents could choose more than one option up to as many of the provided options. More than 55% of the respondents reported that Current news covered in mass media are discussed among their WhatsApp circle. The second most discussed type of content is any news in personal circle as being reported by 47% respondents. Almost one third of the respondents reported prevailing news issues and breaking news are discussed in their WhatsApp circle.

Table 3.3: Motives to share news related contents (Multiple Choice).

Variable	Frequency	Percent
Consciousness	9	9%
Awareness	66	66%
Concern	20	20%
Social Capitalization	27	27%
Others	6	6%

The above responses are in response to checklist question. The respondents were free to choose as many options out of provided options. The main motive of sharing and discussing news related contents on WhatsApp is to create awareness as being reported by 66% respondents. One fifth of the respondents do so because of concern about the matter. One fourth of the respondents mentioned they discuss news related content on WhatsApp for social capitalization.

Table 3.4: Frequency of News related contents (Responses in Percent).

	Always	Often	Sometimes	Rarely	Never
On issue of the day	35	24	22	17	2
On Political matters	17	20	32	22	9
On Social issues	23	27	35	9	6
On Entertainment	46	23	19	12	0
On Education	30	27	35	7	1
On Government	10	22	37	22	9
On Economic	9	13	40	26	12
On Cultural affairs	11	19	40	21	9
On Spiritual	4	17	38	22	19
On Information & Technology	24	19	34	13	10
On Religion	6	17	28	23	26
Informational Content	24	17	37	13	9
On Others	10	3	23	16	48

As per above data, the average frequency of the communicating news related content on above mentioned categories is 19.15% Always, Often 19.14, Sometimes 32.3%, Rarely 17.15%, and never 12.3%. It shows that almost one fifth of the respondents reported news contents related to all above categories are always communicated in their WhatsApp circle. The highest percent of always-communicated content is of entertainment 46%, issue of the day 35%, education 30%. The often communicated content is on education & social issues 27%. Economic and cultural affairs related news is communicated sometimes as being reported by 40% respondents. Also the highest percent in rarely option was news related content on economic matters. Religion or any other types of news are never communicated among their WhatsApp circle. In conclusion the results show that in total 88% of the respondents report that the news related contents as per above categories are communicated. Only a 12.3% respondents reported the news related contents as per above categories are never communicated among their WhatsApp circle.

Table 3.5: Effects of communicating news related content on WhatsApp

Variable	Frequency	Percent
Creates Awareness	63	63%
Updates knowledge about current affairs/events	62	62%
Creates concern for the issue	21	21%
Develops personal opinion	35	35%
Any other, Please specify	3	3%

As the above table represents 62% of the respondents believed news related content communicated through WhatsApp creates awareness and updates their knowledge about current affairs/events. 35% believed it develops personal opinion. One fifth of the respondents reported such communication of news related contents creates concern for the mentioned issue.

6. FINDINGS & DISCUSSIONS

The survey comprised major participation from master's students. Majority belongs to urban areas. The majority of the respondents aged in age group of 20-25 years. The results show that youth are actively using WhatsApp. Majority of the respondents are using WhatsApp from more than a year. Youth uses WhatsApp several times in a day as being reported by half of the respondents. In a day, youth spend more than 2 hours on WhatsApp as being reported by one fifth of the respondents. Youth is using WhatsApp mainly for communicating with friends. The second main purpose of using WhatsApp is using it for fun & relaxation, and updating information/knowledge. 93% respondents in total (Always, Often, Sometimes and rarely) reported they perform news related activities on WhatsApp. Less than 7% respondents never perform any news related activity on WhatsApp. Maximum of the communicated news contents are about current issues covered in media, any news in personal circle, and breaking news. A majority i.e. 66% of the respondents reported the main motive for communicating news related contents on WhatsApp is

creating awareness. Almost 87.7% respondents reported that the news related contents about issue of the day, political matters, social issues, entertainment, education, Government, Economics, Cultural affairs, Spiritual matters, Information & technology, informational content are communicated on WhatsApp (Always, Often, Sometimes, Rarely). The always-communicated contents are on entertainment, issues of the day, and education. Although news matters specifically on religion or any other types are never communicated on WhatsApp. The majority of the respondents opined that news related contents communicated through WhatsApp create awareness and updates information and knowledge about current affairs.

7. CONCLUSIONS

The news discussion was and is an important element of aware citizens' life and is keeping a move with the technological advancements. WhatsApp with its popularity as mobile instant messaging application is also proving crucial in creation and dissemination of news. The present study aimed to explore news consumption and communication through WhatsApp. Survey results show that WhatsApp is very popular among youth and is being used prominently in news communication. The most communicated news contents are about entertainment news and issue of the day. The maximum of the content includes current issues covered in media. The news contents are communicated on WhatsApp with a motive to create awareness as being reported by majority of the respondents. Youth also opined that news communication through WhatsApp creates awareness and updates information and knowledge.

Online communication mediums are proving crucial in news communication and discussions. These applications create mobile social networks. Almost every person today is using online social networks. On these social networks every aspect of life & society is discussed. On which people create, share, express, and freely discuss their views and opinions about different matters. WhatsApp being cost effective is accelerating this pace of news communication and discussion in informal communication platforms.

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A Social Networking For Sharing Infrastructure Resources In The Social Cloud Computing

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1 st	Anand. R	Assistant Professor, Department of Computer Sci. & Engineering, BMS Institute of Technology, Avalahalli Bengaluru-Karnataka, India
2 nd	Pushpalatha. M	M.Tech. Student, Department of Computer Sci. & Engineering, BMS Institute of Technology, Avalahalli Bengaluru-Karnataka, India
3 rd	Dr. Rajshekhar M Patil	Professor, Department of Computer Sci. & Engineering, HKBK college of Engineering, Nagwara Bengaluru-Karnataka, India

Abstract

The pervasive nature of Online Social Network (OSN) and Cloud computing, clients are beginning to investigate better approaches to connect with, and use these creating standards. OSNs are digital relationship between users that allows them to share and access information on basis of their social associations. In OSN there is pre-established trust formed through 'friend connections' within an OSN to form a dynamic 'Social Cloud' by empowering users to share resources within a Social Cloud. Users have contributed in making the foundation of social cloud strong via investment in computerized groups. This is further emphasized by the representation, documentation and investigation of social connections. Social Cloud is getting to be more refined. This will facilitate and make it simpler for clients to share their own resources and information via OSN. Thus in a Social Compute Cloud the provisioning of Cloud infrastructure is supported through 'friend' connections is modeled in the proposed model. In particular, the proposed model adventures the trust publicized in OSNs as an issue for the good behavior of other 'workers' in the system.

1. INTRODUCTION

In recent years there has been rapid growth in cloud computing and social networking technologies. Cloud computing shifts the computing resources to a third party, eliminating the need to purchase, configure and maintain those resources. Infrastructure as service providers rid users of the burdens associated with purchasing and maintaining computer equipment; instead compute resources can be out sourced to specialists and consumers can obtain access to an “unlimited” supply of resources. There are two key issues are the notions of trust and accountability between cloud service provider and consumers and providers. In this context, trust and accountability encapsulate several different aspects such as security, privacy, transparency. Goal of proposed system is to provide an infrastructure that allows the execution of workflow on traditional Grid resource which can be on demand with additional Cloud Resources, if necessary. We are focused on provide resource for execution of consumer with proper resource allocation.

Enjoys parts of the merits provided by the conventional cloud and extends features of other distributed computing paradigms namely the grid computing. Imagine the scenario of a computing paradigm where users who collectively construct a pool of resources perform computational tasks on behalf of their social acquaintance. This paradigm and model are similar in many aspects to the conventional distributed computing paradigm. It exhibits such similarities in that users can outsource their computational tasks to peers complementarily to their friends for computing using OSC. Most vital to the connection of Social cloud is the total computational force gave by clients who are willing to share their idle time and available compute cycles. In Online Social Cloud, owners of these computing resources are willing to share their computing resources for their friends, and for a different economic model than in the conventional cloud computing. This behavior makes this work share commonalities with an existing stream of work on creating computing services through volunteers, although by enabling trust driven from social networks. In this paradigm exploits the trust exhibited in social networks as a guarantee for the good behavior of other workers in the system.

2. MOTIVATION

Volunteer computing is a form of internet based distributed computing, which allows users to share their processing cycles, and helps to run computationally costly projects. In existing volunteer computing platforms consist of millions of users, providing large amount of processing cycles and memory. Since the rapid growth in the volunteer computing projects, more researchers have been attracted to study and improve the existing volunteer computing system. In this paper we argue an alternative approach to establish trust and accountability in volunteer computing and Cloud platforms: a Online Social Cloud. It is a dynamic environment through which (new) Cloud like provisioning scenarios can be established based upon the implicit levels of trust that transcend the interpersonal relationships digitally encoded within a social network.

Vision of the OSC is motivated by the need of individuals or groups to access resources they are not in possession of but that could be made available by connected peers which show users are willing to donate personal computer resources to “good” causes. Using this approach, users can download and install a middleware connect their personal social network, and provide resources to, or consume resources from, their friends through a Online Social Network (OSN). We anticipate that resources in a Social Cloud will be shared because they are underutilized, idle, or made available altruistically Online Social Cloud is “a resource and service sharing model utilizing pre-established trust between members of a social network.

3. Methodology

3.1 User Preferences & Resource allocation

This is an important requirement for an Online Social Cloud, as without it we cannot assume any form of pre-existence trust between outsourcer and worker. Once the social network of a user has been accessed and the social database populated, the question is how to interpret the user’s social ties for the purposes of allocation. There is no single unified methodology for the interpretation of social ties, and which to use is often context dependent

3.2 User Preferences

In user preferences user can specify the ranks to their friends according to their relationship among them (friend, family, etc.). We provide simple preference matching interface in that both outsourcer and worker can define preference for each other. The higher value gives greater preference to their friend. Assigning same value for different friends is possible. This preference assignment is stored in centralized server for resource allocation. Users also define who they are willing to share with, or “block” users

3.3 Resource Allocation

Resource Allocations based on the principle of best effort and random allocation. When allocating resources the Resource Allocation Server filters the list of donated resources. The general process of allocation in the Resource Allocation Server is to first determine available donations with which the requesting user has a relationship. To do this the list of all donations in the system is filtered by the list of friends for a particular user. The outsourcer’s preferences for each possible friend are then computed by retrieving preferences stored in the database. Likewise the preferences for each of these friends for the requesting user as an outsource are computed. This information is then aggregated and sent to the matching service to determine an appropriate match. The Resource Allocation Server attempts to acquire available nodes from the provider to satisfy the request using resource acquisition mechanisms. If, by the time of reservation, the chosen provider is no longer available the entire process must be re executed

3.4 Social Resource Allocation

The general process of allocation in the Resource Allocation Server is to first determine available donations with which the requesting user has relationship. To do this the list of

all workers in the system is filtered by the list of friends for a particular user. The consumer's preferences for each possible friend are then computed by retrieving preferences stored in the database. Likewise the preferences for each of these friends for the requesting user as a consumer are computed. This information is then aggregated and sent to the matching service to determine an appropriate match. The Resource Allocation Server attempts to acquire available nodes from the provider to satisfy the request using resource acquisition mechanisms

3. ARCHITECTURE

The architecture composed of the following modules. The working of these modules are also described below:

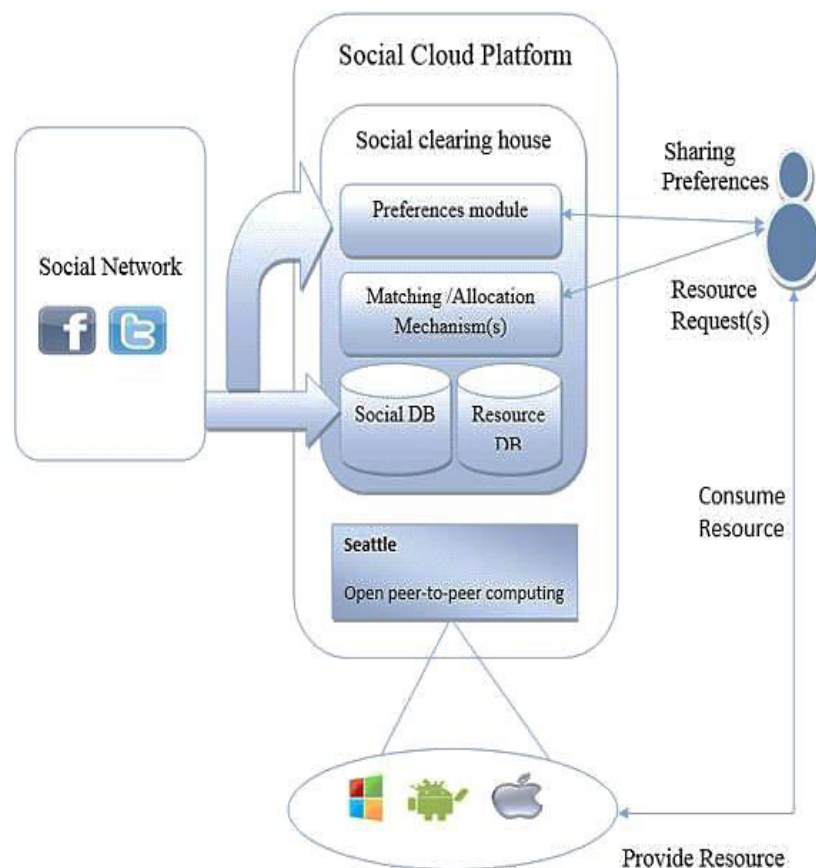


Figure 1: Architecture of social cloud networks

4.1 Social Network

We are creating a social network like Facebook that acts as an interface for individuals to create profiles, gets authenticated and share valuable resources over a social network. The new user will register to the social network by providing their valuable information. An existing user will directly login to the social network by providing their id and password. It allows the users to share images, videos to others over the social network. It allows the users to update their status. The Admin Monitors All the Activities Happening inside that of a Social Network. The Users Can Interact with One Another and Share and Reach out

Their Friends. The Users Set Preference with whom they want their Resources to be shared.

4.2 Social Cloud Platform

Integration between Social Network and Cloud Platform, another component of Social Relationship Management direct links to customer insights, trends, and feedback based on on-going social marketing campaigns, content, and messaging all from a single interface. It's a complete approach to social that's built for the way social brand teams work efforts in one place. The technical implementation for the construction and facilitation of the Social Cloud as well as necessary middleware to enable resource sharing between "friends" at the edges of the Internet. Social Cloud platform Acts as The Storage Unit for The Resources Being Shared over the Social Network.

4.3 Social Clearing House

A Social Clearing House is an institutionalized microeconomic system that defines how supply is allocated to demand. Using this module, users can download and install a middleware leverage their personal social network via a Facebook application, and provide resources to, or consume resources from, their friends through a Social Clearing House. However, this definition is orientated primarily for monetary based exchanges, which is not the case here. Therefore, a social clearing house captures the following: the protocols used for distributed resource allocation, the rules of exchange, i.e. who can take part, and with whom may they exchange, and the formalization of one or more allocation mechanisms. For this reason, the social clearing house requires two databases: to capture the social graph of its users, as well as their sharing preferences, and a resource manager to keep track of resource reservations, availability, and allocations.

4.4 Middleware

A middleware is to provide the basic resource fabrics, resource virtualization and sandboxing mechanisms for provisioning and consuming resources. It should also define the protocols needed for users and resources to join and leave the system.

4.5 Socio- Technical Adapters

A socio technical adapter, which in our case is a Facebook application, is needed to provide access to the necessary aspects of users' social networks, and acts a means of authentication, for example, via Facebook connect. Once a user's social network has been acquired via the socio technical adapter, the social clearing house requires the sharing preferences of the user to facilitate resource allocation. Many aspects of a socio technical adapter require careful consideration, and many methods can be applied to capture preferences.

4.6 Matching mechanisms

Matching Mechanisms are socio economic implementations of the social clearing house microeconomic system. They determine appropriate allocations of resources via users' sharing preferences across their social network. Our approach considers non-monetary allocation mechanisms based on user preferences. Depending on the specific market

objective, several algorithms exist that compute a solution to the matching problem, e.g. computing a particularly fair solution or one with high user welfare.

5. Experimental Results And Analysis

5.1 Matching Algorithm runtime

It can be used to either perform batch allocations for a group of users, or single allocation for an individual user. Whilst it may seem unusual to facilitate both of these settings, the reason is simple: the matching algorithms perform best when batches of users allocated simultaneously. Individual allocations may result in resources being blocked for other users, for example those with a small number of connections. Whereas batch allocation means that users may have to wait until the next round of allocations to receive resources. Both options are inefficient in different ways: individual allocation achieves at best local optima and can block resources for other users, but can be performed in near real time, as the computational effort is significantly lower; batch allocations could achieve the global optimum, but may require either migrations or users to wait for resources. The social network of users is captured via the existence of preferences between users. The matching mechanisms will only consider matching two users if both have a preference for each other. If a preference exists in only one direction, i.e. A has ranked B, but B has not ranked A, we assume that B has not yet considered A, and A's preference for B will be ignored

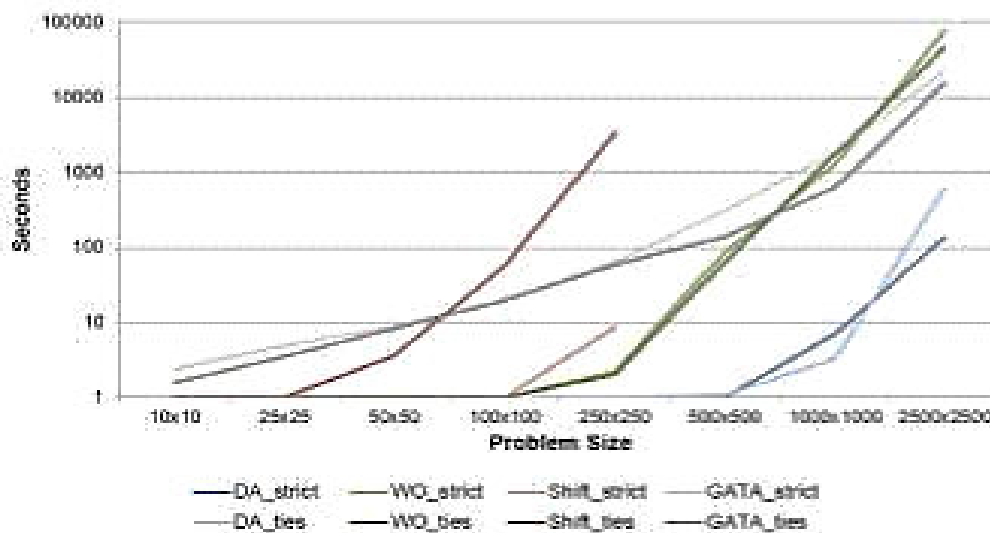


Figure 2: Algorithm Runtimes with Different Problem Sizes

5.2 Allocation algorithm runtime

The runtime of an allocation algorithm has a large impact on its applicability for a Social Compute Cloud. Given that preference based matching is often NP Hard, algorithm runtime is an important design consideration. Therefore, we investigate how relaxing these assumptions impact algorithm runtime.

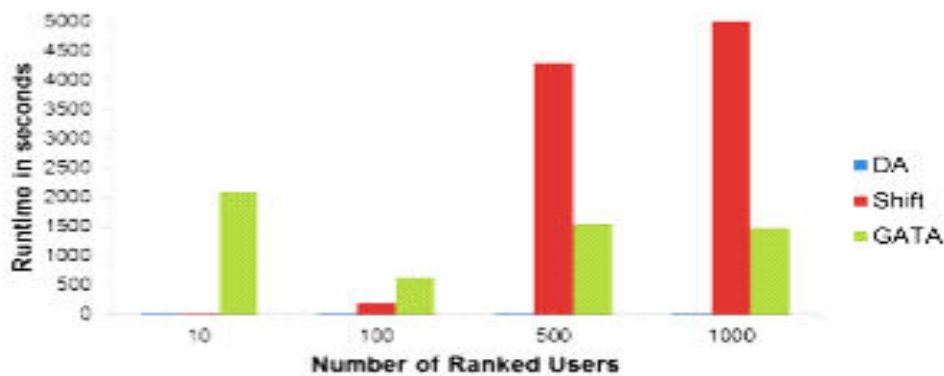


Figure 3: Runtimes for Different Numbers of Ranked Users, for 1000 Users per Side

6. ISSUES AND CHALLENGES

6.1 Privacy and trust

Privacy has been a subject of great concern with social networks. The protection of a user's identity varies across the various social network services available across the internet. This website encourages the use of real names and thus makes a connection between their social network and public identities. There are means to deduce identities based upon the social network graph topology, and distorted and removing data could affect the quality of data analysis and mining of the information that is being shared. These issues raise questions as to how these social network services handle their data to balance the needs of third party data consumers and the expectations of their users.

6.2 Ownership of content

The massive amounts of data that exist on social networking services are mostly user generated. Different social media sites have different policies. When dealing with items such as images, the content remains private if set as private by user preferences. While users may be the owners of this data, license agreements based upon the use of the services' network may allow these sites to retain data even after users initiate removal.

7. CONCLUSION

In this paper, we have presented a Social Compute Cloud: a platform that enables the sharing of infrastructure resources between friends via digitally encoded social relationships. Creating a Social Compute Cloud platform will enable the sharing resources between friends via digitally encoded social relationships. Using our implementation, users will be able to execute programs on virtualized resources provided by their friends. Preference based resource matching is (in a general setting) an NP hard problem, makes often unrealistic assumptions about user preferences and most state of the art algorithms run in batch modes. Cloud accessing user's social networks, allowing users to elicit sharing preferences, and utilize matching algorithms to enable preference based socially aware resource allocation.

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Identify A Person Face Based On Unconstrained Face Recognition From A Media Collection

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1 st	Jaya G Nanwani	M.Tech. Student, Department of Computer Sci. & Engineering, JD college of Engineering , Nagpur - Maharashtra
2 nd	Shrikant Sonekar	M.Tech. Student, Department of Computer Sci. & Engineering, JD college of Engineering , Nagpur - Maharashtra

Abstract

Identify a person face based on unconstrained face images is an increasingly prevalent task for law enforcement and intelligence agencies. In general, these applications are to determine the identity of a face based on one or more probe (enquiry) face images or face videos. New challenges are encountered. These challenges are due to variations in ambient illumination, image resolution, face pose and expressions. In forensic investigations where the goal is to identify a person of interest, often based on low quality face images and videos, we need to utilize whatever source of information is available about the person. In this paper, we study about face identification of persons of interest in unconstrained imaging scenarios with uncooperative subjects. Given a face media collection of a person of interest (i.e., face images and video clips, 3D face models built from image or videos, face sketch.

1. INTRODUCTION

Face detection is a fundamental task for applications such as face tracking, red-eye removal, face recognition and face appearance recognition. To build flexible systems which can be executed on mobile products, like handheld PCs and mobile phones, efficient and robust face detection algorithms are required. Most of existing face detection algorithms considers face detection as binary classification problem. Even though it looks a simple classification problem, it is very complex to build a good face classifier. Identifying a person based on unconstrained face images is an increasingly prevalent task for law enforcement and intelligence operations. In general, these applications seek to

determine the identity of a subject based on one or more probe images or videos, where a top ranked list retrieved from the gallery may suffice for analysts to identify the subject. In many cases, such a forensic identification is performed when multiple face images and/or a face track (*i.e.*, a sequence of cropped face images which can be assumed to be of the same person (men, women, children) from a video of a person of interest are available. For example, in investigative scenarios, multiple face images of an unknown subject often arise from an initial clustering of visual evidence, such as a network of surveillance cameras, the contents of a seized hard drive, or from open source intelligence (*e.g.*, social networks). In turn, these probe images are searched against large-scale face repositories, such as mug shot or identity card databases.

2. REVIEW OF LITERATURE

Use of Commercial off the shelf (COTS) [1] faces recognition systems with respect to the aforementioned challenges in large-scale unconstrained face recognition scenarios. For a probe image, the COTS matcher assigns a face confidence value in the range of (0, 1), which is used as the quality value. For each video frame, the same face confidence value measure is used. The average face confidence value across all frames is used as the quality value for a video track. First, the efficacy of forensic identification is explored by combining two public domain unconstrained face databases. The release of the public-domain database Label Faces in the Wild5 (LFW) in 2007 spurred interest and progress in unconstrained face recognition. The LFW database is a collection of 13, 233 face images, downloaded from the Internet, of 5, 759 different individuals such as celebrities, publication [4]. These images were selected since they meet the criterion that faces can be successfully detected by the Viola-Jones face detector [8].

LFW database contains significant variations in facial pose, illumination, and expression, and many of the face images are occluded [3]. The LFW protocol consists of face verification based on ten-fold cross-validation, each fold containing 300 “same face” and 300 “not-same face” image pairs. The YouTube Faces6 (YTF) database, released in 2011, is the video-equivalent to LFW for unconstrained face matching in videos. The YTF database contains 3, 425 videos of 1, 595 individuals. The individuals in the YTF database are a subset of those in the LFW database. Faces in the YTF database were also detected with the Viola-Jones face detector at 24 fps, and face tracks were included in the database if there were at least 48 consecutive frames of that individual’s face. Similar to the LFW protocol, the YTF face verification protocol consists of ten-fold cross-validation, each fold containing 250 “same face” and 250 “not-same face” track pairs.

Local Binary Pattern (LBP) features have perform much well in various applications, including texture classification and segmentation, image retrieval and surface inspection, face features. The original LBP operator labels the pixels of an image by thresholding the 3-by-3 neighborhood of each pixel with the center pixel value and considering the result as a binary number (0, 1). Unconstrained face recognition methods can be grouped into two main categories: (a) Single face media based methods and face

media collection based methods. Single media based methods focus on the scenario where both the query and target instances contain only one type of face media, such as a still images, video tracks, or 3D image(s) or model(s). However, the query and target instances can be different media types, such as single image vs. single video. These methods can be effective for unconstrained illumination and expression variations but can only handle limited pose variations.

3. RESEARCH METHODOLOGY

We take gender and race attributes of each subject in the LFW and YTF face databases as one type of media. Since this demographic information is not available for the subjects in the LFW and YTF face databases. We pass the new image Face for analysis. In our paper, we use of LBP features and Genetic algorithm for finding features and recognition face from database with respect to the aforementioned challenges in large-scale unconstrained face recognition scenarios. First, the efficacy of forensic identification is explored by combining two public domain unconstrained face databases, Labeled Faces in the Wild (LFW) [4] and YouTube Faces (YTF), to create sets of multiple probe images and videos to be matched against a gallery consisting of a single image for each subject.

To replicate forensic identification scenarios, we further populate our gallery with one million operational mug shot images from the Pinellas County Sheriff's Office database.³ Using this data, we are able to examine how to boost the like-hood of face identification through different fusion schemes, incorporation of 3D face models and hand drawn sketches, and methods for selecting the highest quality video frames. Researchers interested in improving forensic identification accuracy can use this competitive baseline to provide more objectivity towards such goals.

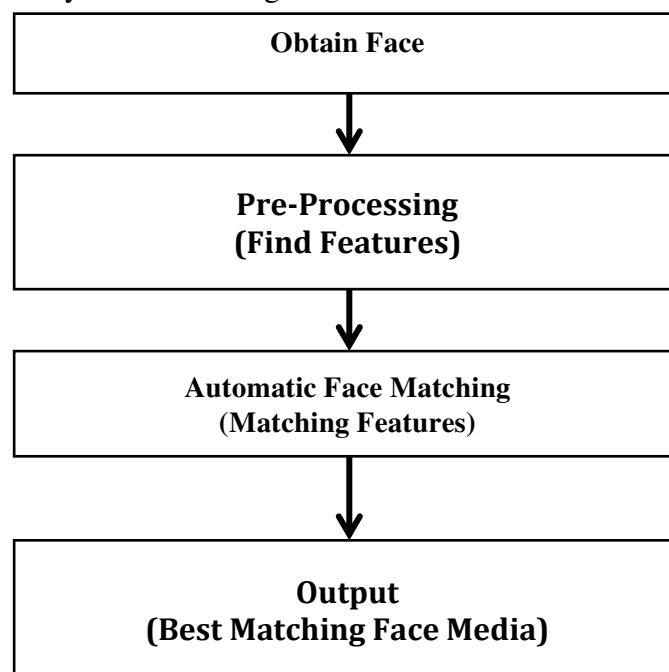


Figure 1: Flow Graph of Face Recognition

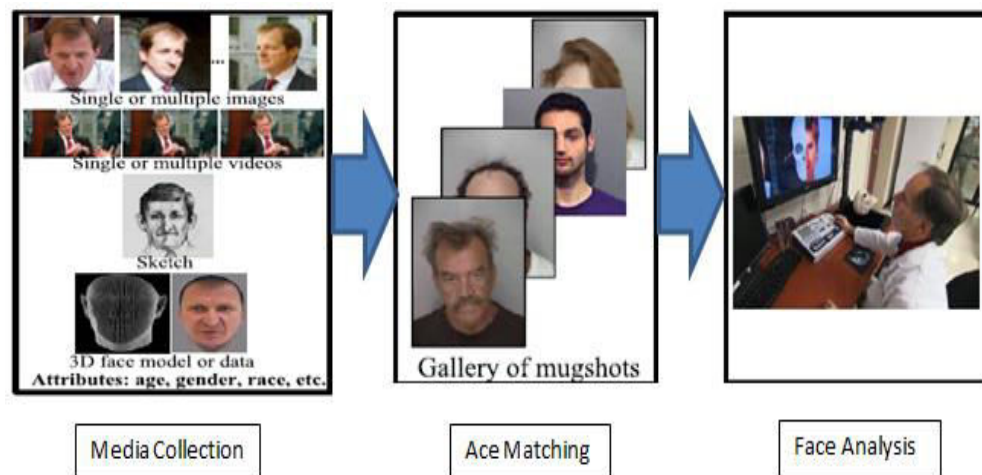


Figure 2: Schematic Diagram of Face Recognition

4. RESEARCH ANALYSIS AND DISCUSSION

GA is based on natural selection discovered by Charles Darwin. They employ natural selection of fittest individuals as optimization problem solver. Optimization is performed through natural exchange of genetic material between parents. Off-springs are formed from parent genes. Fitness of off-springs is evaluated. The fittest individuals are allowed to breed only. In a Genetic Algorithm, a population of candidate solutions (called individuals, creatures, or phenotypes) to an optimization problem is evolved toward better solutions. Each candidate solution has a set of properties (its chromosomes or genotype) which can be mutated and altered; traditionally, solutions are represented in binary as strings of 0s and 1s, but other encodings are also possible.

A typical GA requires:

- i.) A genetic representation of the solution domain,
- ii.) A fitness function to evaluate the solution domain.

A standard representation of each candidate solution is as an array of bits. Arrays of other types and structures can be used in essentially the same way. The main property that makes these genetic representations convenient is that their parts are easily aligned due to their fixed size, which facilitates simple crossover operations. Variable length representations may also be used, but crossover implementation is more complex in this case. Tree-like representations are explored in genetic programming and graph-form representations are explored in evolutionary programming; a mix of both linear chromosomes and trees is explored in gene expression programming.

GA (Genetic Algorithm) are as follows:

- [1] **[Start]:**-Generate random population of n chromosomes.
- [2] **[Fitness $f(x)$]** :- Evaluate the fitness $f(x)$ of each chromosome x in the population

- [3] **[New population]** :- Create a new population by following steps until the new population is arrive.
- [Selection]** :- Select two parent chromosomes from a population according to their fitness (the better fitness, the bigger chance to be selected)
 - [Crossover]**:-With a crossover probability cross over the parents to form a new offspring. If no crossover was performed, offspring is an exact copy of parents.
 - [Accept]**:- Place new offspring in a new population
- [4] **[Replace]**:- Use new generated population for a further run of algorithm
- [5] **[Test]**:- If the end condition is satisfied, stop, and return the best solution in current population
- [6] **[Loop]**:- Go to step Two

5. CONCLUSION

In this paper, we studied face identification of persons of interest in unconstrained imaging scenarios with uncooperative face using Genetic algorithm with LBP features. Given a face media collection of a person of interest (*i.e.*, face images and video clips, 3D face model built from images, face sketch), rather than a ranked list for each face media sample. Evaluations are provided in the scenarios of closed set identification, open set identification, closed set identification with a large gallery, and verification.

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Effectiveness Of Co-Operative Learning Method And Active Learning Methodology On The Achievement In Learning Science Concepts

Paper ID	IJIFR/V3/ E10/ 029	Page No.	3748-3752	Subject Area	Education
Key Words	Instructional Strategies, Classroom Activities, Teacher Student Interactions, Operative Learning Method (CLM), Active Learning Methodology (ALM)				

1st	Rajendran .K. R	Graduate Assistant, Government Higher Secondary School, Malaipatti, Tamilnadu
2nd	Selvaraj .A	Post Graduate Assistant, Government Higher Secondary School, A.Vellaiyapuram, Tamilnadu
3rd	Dr. S. Rajaguru	Associate Professor Department Of Education, SRK Vidyalaya College of Education, Coimbatore, Tamilnadu

Abstract

In general the improvement in the quality of education depends upon the classroom activities. So the investigator has focussed his attention on the 'Interaction' happenings in the class room between the teacher and the students or teaching and learning. So many things have to be considered in the instructional strategies to the students in learning 'Science'. So here the investigator intended to evaluate the modified teaching strategies adopted by the teachers in order to develop the efficiency of teaching. He concentrated on the three different teaching methodologies viz; learner centred instructional methods such as Co-operative learning method and Active learning Methodology. He also poured his attention on whether these methods are more effective than our earlier traditional method of teaching 'Lecturing' or 'chalk and talk' method. This study concentrates on the significant difference if any in the achievement of the children learning science concepts through different teaching methodologies viz; ALM, CLM and Conventional Teaching (CT). The investigator has adopted 'Purposive sampling Technique' for this study. He selected 122/150 students from a school in a semi-city who are studying VIII standard after Maline's mental ability test.

1. INTRODUCTION

“Education is the life long process of acquiring new knowledge and skills through formal, non-formal and informal exposure to information, ideas and experiences. The fundamental concept of Education is given as “Bringing Up” or “Leading Out” or “Manifesting the inherent potentialities of the children”. It is a product of experience and universally acknowledged that any attempt to improve the quality of education ultimately depends on the quality of instruction imparted to the children in the classroom. It has been based on mainly on the conventional methods which have become outmoded in the present modern world. There has been no remarkable and considerable changes occurred in these instructional methods with the passage of time. Our enormous growth of population and man power requirements have necessitated the revolutionary changes in our educational system and teaching methods. If we improve the quality of existing educational field, to cope up with the challenges in education, we ought to pay proper attention for changing the strategy of instruction and should be made to inculcate new technology in teaching and learning. Hence efforts towards providing appropriate teaching techniques suggested that may yield many interesting insights and possibilities within the circumstances.

2. STATEMENT OF THE PROBLEM

To study the effectiveness of the instructional strategies among the children in learning science concepts the investigator has undertaken the task of estimating “Effectiveness of Co-Operative learning method and active learning methodology on the achievement in learning science concepts”. This study attempts to compare the achievements of VIII std. students of a Government Higher Secondary School in Learning Science through Co-Operative Learning Method (CLM), Active Learning Methodology (ALM) and conventional teaching (CT) strategy.

3. OBJECTIVES OF THE STUDY

- I. To develop the instructional strategies such as Active Learning Methodology (ALM) and Co-Operative Learning Method (CLM) for teaching science concept to the children.
- II. To study the significant difference if any in the achievement of the children learning science concepts through different teaching methodologies viz; ALM, CLM and Conventional Teaching (CT).
- III. To study the influence of different background variables (Gender, educational qualification of parents; ie; a level etc;) in learning science concepts through different strategies of teaching like ALM, CLM, ECT.

4. METHODOLOGY

The researcher adopted the following techniques

- I. Maline's Mental ability test for the school children
- II. Pre-Test, Post-Test, Retention test, experimental design were used in this study.
- III. Comparisons of the scores obtained by the children have been made for the study.

4.1 Sample

The investigator has adopted 'Purposive sampling Technique' for this study. He selected 122/150 students from a school in a semi-city who are studying VIII std. after Maline's mental ability test.

4.2 Tools used for the study

The Researchers adopted two tools namely

- i.) Maline's mental ability test
- ii.) Achievement test those are particularly appropriate for certain sources of data yielding information of the form that would be most effectively used.

4.3 Data gathering procedure

The researcher directly involved in the collection of data. A group of 122/150 students were selected for this study. Then the whole group was divided into three 41 for ALM, 41 for CLM and 40 for CT. In classifying the three groups, the 'Pre-test-Post-test-Retention test' equated group design was followed.

5. ANALYSIS AND INTERPRETATION OF DATA

For this study, the researcher considered the scores of Pre-test, Post-test, Retention test of the children. It includes the results of statistical analysis of data connected with those tests. He used differential statistics. He used 't' test and 'F' test for knowing the significant difference.

Table-1: Distribution of ALM, CLM and CT groups—Post-test scores

ALM		CLM		CT	
CI	F	CI	F	CI	F
12-14	2	11-13	5	10-12	6
15-17	8	14-16	11	13-15	10
18-20	15	17-19	14	16-18	15
21-23	11	20-22	8	19-21	7
24-26	5	23-25	3	22-24	2
No. of children	41		41		40
*Mean	20.024		17.51		15.725
*SD	2.96		3.40		3.12

Table-2: Distribution of ALM, CLM and CT groups- Retention test scores

ALM		CLM		CT	
CI	F	CI	F	CI	F
9-11	2	7-9	5	7-9	7
12-14	8	10-12	11	10-12	12
15-17	15	13-15	14	13-15	15
18-20	12	16-18	7	16-18	4
21-23	4	19-21	4	19-21	2
No./Of children	41		41		40
Mean	16.366		13.658		12.225
SD	3.122		3.368		3.221

Table 3: Impact of different instructional strategies

Sl. No	Group	N	mean	SD	SE	't' value
1	ALM	41	20.02	2.96	0.704	3.568**
	CLM	41	17.51	3.4		
2	CLM	41	17.51	3.4	0.726	2.462**
	CT	40	15.73	3.12		
3	CT	40	15.73	3.12	0.676	6.362**
	ALM	41	20.02	2.96		

** denotes significance at 0.01 level

Table 4: F value for ALM, CLM and CT groups

Source of variation	SS	DF	MSS	F value
Between	378.31	2	189.16	18.866
Within	1193.11	119	10.026	Significant at 0.01 level
Total	1571.41	121		

6. FINDINGS

- I. There is a significant difference in the post-test & retention test between the children learnt through ALM and other two(CLM &CT groups in learning science concepts (i.e) the children who learnt through ALM scored more than other two groups(CLM&CT). This is an indication of ALM strategy is more effective than CLM and CT to learn science concepts.
- II. Comparing CLM and CT groups, the CLM group scored more than the CT group in the post- test. This shows that there is a significant difference between these two. So it is understood that the CLM is more effective than the CT group in learning science concepts.
- III. In addition to that CLM immediately follows ALM group.
- IV. All the background variables have less influence in the test performances of all the three methodologies. Student involved ALM is more effective in learning science concepts than th other two methodologies CLM &CT

7. RECOMMENDATIONS

- I. A comprehensive survey can be conducted by the NCERT, SCERT, DIET at different levels to get the holistic picture about the teaching methods of science.
- II. Indigenous materials and the model kit should be developed with the expertise of NCERT, SCERT and DIET training should be given to the teachers accordingly.
- III. The teachers can adopt appropriate instructional strategies to the benefit of the children in the science class.
- IV. Modern innovations like CCTV, Internet, Computer technology and mastery learning can be introduced to enhance the potentiality of the children.
- V. As it is found that ALM is more effective teaching methodology, the educators and the education department must have this view in their mind to experiment alternative teaching strategy for the benefit of the children.

8. CONCLUSION

The children who are interested in learning science have to be identified and special attention must be provided to who are intelligent but unable to cope up with their counterparts in one or more subject concepts. This study reveals that knowledge on science is quite essential to inculcate proper thinking and correct methods. Hence the suitable instructional strategy must be provided in the educational institutions. The children have to be involved in teaching-learning process especially in the practical sessions in learning science concepts.

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Solving FLPP With Symmetric Trapezoidal Fuzzy Numbers

Paper ID	IJIFR/V3/ E10/ 030	Page No.	3753-3762	Subject Area	Mathematics
KeyWords	LR Symmetric Trapezoidal Fuzzy Numbers, Fuzzy Linear Programming Problems, Magnitude Of Fuzzy Numbers				

1st	Dr. A. Sahaya Sudha	Assistant Professor Department Of Mathematics Nirmala College for Women, Coimbatore
2nd	M. Revathy	Assistant Professor Department Of Mathematics Dr. NGP Arts and Science College, Coimbatore

Abstract

The objective of this paper is to deal with a kind of fuzzy linear programming problem wherein all the parameters and variables are symmetric trapezoidal L-R fuzzy numbers. Here, we have studied the arithmetic operation in symmetric trapezoidal L-R fuzzy numbers and used magnitude of fuzzy numbers to arrive at a crisp value.

1. INTRODUCTION

Any linear programming model representing real world situations involves a number of parameters whose values are assigned by experts. However, both experts and the decision maker often do not precisely know the value of those parameters. Therefore, the knowledge of experts about the parameters as fuzzy data is considered, as introduced by Zadeh [10]. Bellman and Zadeh [1] proposed the concept of decision making in fuzzy environment. Tanaka et al. [2] adopted this concept for solving mathematical programming problems. Zimmerman [11] proposed the first formulation of fuzzy linear programming and also the fuzzy approach for multi-objective linear programming problems was presented. Chanas [12] proposed the possibility of the identification of a complete fuzzy decision in fuzzy linear programming by use of the parametric programming technique. Werners [13] introduced an interactive system which supports a decision maker in solving programming models with crisp or fuzzy constraints and crisp

or fuzzy goals. In fuzzy decision making problems, the concept of maximizing decision was introduced by Bellman and Zadeh [1]. This concept was later adopted to problems of mathematical programming by Tanaka et. al. [2,3]. Lai and Hwang [5], Tong Shaocheng [3], Buckley [6], among others, considered the situation where all parameters are in fuzzy. Lai and Hwang assumed that the parameters have a triangular possibility distribution.

2. PRELIMINARIES

2.1. Definition [7]

A fuzzy set \tilde{a} on R is said to be a symmetric trapezoidal fuzzy number if there exist real numbers a_1, a_2 where $a_1 \leq a_2$ and $h > 0$ such that

$$\tilde{a} = \begin{cases} \frac{x}{h} + \frac{h-a_1}{h}, & \text{for } x \in [a_1-h, a_1] \\ 1 & \text{for } x \in [a_1, a_2] \\ -\frac{x}{h} + \frac{a_2+h}{h}, & \text{for } x \in [a_2, a_2+h] \\ 0 & \text{otherwise} \end{cases}$$

Let $\tilde{a} = [a_1, a_2, h, h]$. When $h = 0$; $\tilde{a} = [a_1, a_2]$ and $F(S)$ denote the set of all symmetric trapezoidal fuzzy numbers.

2.2. Definition [7]

A fuzzy set \tilde{a} on R is said to be a LR symmetric trapezoidal fuzzy number if there exist real numbers m, n where $m \leq n$ and $a > 0$ such that

$$\tilde{a} = \begin{cases} \frac{x-a}{m-a}, & \text{for } x \in [a, m] \\ 1 & \text{for } x \in [m, n] \\ \frac{a-x}{a-n}, & \text{for } x \in [n, a] \\ 0 & \text{otherwise} \end{cases}$$

2.3. Definition [14]

The magnitude of LR symmetric trapezoidal fuzzy number $\tilde{a} = [a_1, a_2, a_3, a_1]$ is given by

$$\text{mag}(\tilde{a}) = \frac{a_1 + 5a_2 + 5a_3 + a_1}{12}$$

2.4. Definition [7]

Let $F(S)$ be the set of all symmetric trapezoidal fuzzy numbers, then the fuzzy linear programming problem is modeled as

$$\max \tilde{z} \approx \sum_{j=1}^n \tilde{c}_j \tilde{x}_j$$

$$\text{Subject to } \sum_{j=1}^n a_{ij} \tilde{x}_j \leq \tilde{b}_i, i = 1, 2, 3, \dots, m_0,$$

$$\sum_{j=1}^n a_{ij} \tilde{x}_j \geq \tilde{b}_i, i = m_0 + 1, m_0 + 2, m_0 + 3, \dots, m \quad (1)$$

And $\tilde{x}_j \geq \tilde{0}$ for all $j=1, 2, 3, \dots, n$,

Where $a_{ij} \in \mathbb{R}$, $\tilde{c}_j, \tilde{x}_j, \tilde{b}_j \in F(S)$, $i = 1, 2, 3, \dots, m$, $j = 1, 2, 3, \dots, n$, hence the formulation of FLPP.

2.5. Definition [7]

Any $\tilde{x} = (\tilde{x}_1, \tilde{x}_2, \tilde{x}_3, \dots, \tilde{x}_n) \in F^n(S)$, where each $\tilde{x}_i \in F(S)$, which satisfies the constraints and non-negativity restrictions of (1) is said to be a *fuzzy feasible solution* to (1).

2.6. Definition [7]

Let \mathbf{Q} be the set of all fuzzy feasible solutions of (1). A fuzzy feasible solution $\tilde{x}_0 \in \mathbf{Q}$ is said to be a fuzzy optimum solution to (1) if $\tilde{c}\tilde{x}_0 \geq \tilde{c}\tilde{x}$ for all $\tilde{x} \in \mathbf{Q}$, where $\tilde{c} = (\tilde{c}_1, \tilde{c}_2, \tilde{c}_3, \dots, \tilde{c}_n)$ and $\tilde{c}\tilde{x} = (\tilde{c}_1\tilde{x}_1 + \tilde{c}_2\tilde{x}_2 + \tilde{c}_3\tilde{x}_3 + \dots + \tilde{c}_n\tilde{x}_n)$

2.7. Definition [7]

Let $\tilde{x} = (\tilde{x}_1, \tilde{x}_2, \tilde{x}_3, \dots, \tilde{x}_n)$. Suppose \tilde{x} solves $A\tilde{x} \approx \tilde{b}$. If all $\tilde{x}_j \approx [h_j, -\alpha_j, \alpha_j, h_j]$ for some $\alpha_j \geq 0$ and $h_j \geq 0$, then \tilde{x} is said to be a fuzzy basic solution. If $\tilde{x}_j \approx [h_j, -\alpha_j, \alpha_j, h_j]$ for $\alpha_j \geq 0$ and $h_j \geq 0$, then \tilde{x} has some non-zero components, say $\tilde{x}_1, \tilde{x}_2, \tilde{x}_3, \dots, \tilde{x}_k$, $1 \leq k \leq n$.

Then $A\tilde{x} \approx \tilde{b}$ can be written as:

$$\mathbf{a}_1\tilde{x}_1 + \mathbf{a}_2\tilde{x}_2 + \mathbf{a}_3\tilde{x}_3 + \dots + \mathbf{a}_k\tilde{x}_k + \mathbf{a}_{k+1}[h_{k+1}, -\beta_{k+1}, \beta_{k+1}, h_{k+1}] + \mathbf{a}_{k+2}[h_{k+2}, -\beta_{k+2}, \beta_{k+2}, h_{k+2}] + \dots + \mathbf{a}_n[h_n, -\beta_n, \beta_n, h_n] \approx \tilde{b}.$$

If the columns $\mathbf{a}_1, \mathbf{a}_2, \mathbf{a}_3, \dots, \mathbf{a}_k$ corresponding to these non-zero components $\tilde{x}_1, \tilde{x}_2, \tilde{x}_3, \dots, \tilde{x}_k$ are linearly independent, then \tilde{x} is said to be a fuzzy basic solution.

2.1. Remark

A fuzzy number $\tilde{a} = [a_1, a_2, a_3, a_4]$, is called LR symmetric trapezoidal fuzzy number, if $a_1 = a_4$. That is $\tilde{a} = [a_1, a_2, a_3, a_1]$, with a_2, a_3 is a core, a_1 is left and right width.

2.2. Remark [7,8]

The two LR symmetric trapezoidal fuzzy numbers $\tilde{a} = [a_1, a_2, a_3, a_1]$ and $\tilde{b} = [b_1, b_2, b_3, b_1]$ are equivalent if and only if $\frac{a_2 + a_3}{2} = \frac{b_2 + b_3}{2}$. In this case $[a_1, a_2, a_3, a_1] \approx [b_1, b_2, b_3, b_1]$ but $[a_1, a_2, a_3, a_1] - [b_1, b_2, b_3, b_1] \approx [a_1 + b_1, -\alpha, \alpha, a_1 + b_1]$, where $\alpha = (b_3 - a_2) \geq 0$

3. ARITHMETIC OPERATIONS IN LR SYMMETRIC TRAPEZOIDAL NUMBER

3.1 Let $\tilde{a} = [a_1, a_2, a_3, a_1]$ and $\tilde{b} = [b_1, b_2, b_3, b_1]$ be two LR symmetric trapezoidal fuzzy numbers,

then the arithmetic operations on \tilde{a} and \tilde{b} are given by:

(i) Addition: $\tilde{a} + \tilde{b} = [a_1, a_2, a_3, a_1] + [b_1, b_2, b_3, b_1] = [a_1 + b_1, a_2 + b_2, a_3 + b_3, a_1 + b_1]$.

(ii) Subtraction: $\tilde{a} \ominus \tilde{b} = [a_1, a_2, a_3, a_1] - [b_1, b_2, b_3, b_1] = [a_1 + b_1, a_2 - b_3, a_3 - b_2, a_1 + b_1]$.

(iii) Multiplication: $\tilde{a} \cdot \tilde{b} = [a_1, a_2, a_3, a_1] \cdot [b_1, b_2, b_3, b_1] =$

$$\left[\left(\frac{a_2 + a_3}{2} \right) \left(\frac{b_2 + b_3}{2} \right) - w, \left(\frac{a_2 + a_3}{2} \right) \left(\frac{b_2 + b_3}{2} \right) + w, |a_3 b_4 + b_3 a_4|, |a_3 b_4 + b_3 a_4| \right], \text{ where}$$

$$w = \left(\frac{\beta - \alpha}{2} \right), \alpha = \min(a_2 b_2, a_2 b_3, a_3 b_2, a_3 b_3) \text{ and } \beta = \max(a_2 b_2, a_2 b_3, a_3 b_2, a_3 b_3)$$

(iv) Scalar Multiplication:

$$\lambda \tilde{a} = \begin{cases} [\lambda a_1, \lambda a_2, \lambda a_3, \lambda a_1] & \text{for } \lambda \geq 0 \\ [-\lambda a_1, \lambda a_2, \lambda a_3, -\lambda a_1] & \text{for } \lambda < 0 \end{cases}$$

3.2. Relations:[7,8]

Let $\tilde{a} = [a_1, a_2, a_3, a_1]$ and $\tilde{b} = [b_1, b_2, b_3, b_1]$ be two LR symmetric trapezoidal fuzzy numbers,

(i) The relation \leq is a relation in partial order on the set of LR symmetric trapezoidal fuzzy numbers.

(ii) The relation \leq is a relation in linear order on the set of LR symmetric trapezoidal fuzzy numbers.

(iii) Let $\tilde{a} = [a_1, a_2, a_3, a_1]$ and $\tilde{b} = [b_1, b_2, b_3, b_1]$ be two LR symmetric trapezoidal fuzzy numbers then the relation \leq as $\tilde{a} \leq \tilde{b}$ (or $\tilde{a} \geq \tilde{b}$) if and only if either

$$\frac{a_2 + a_3}{2} < \frac{b_2 + b_3}{2} \text{ where } \tilde{a} < \tilde{b} \text{ or } \frac{a_2 + a_3}{2} = \frac{b_2 + b_3}{2}, b_2 \leq a_2, a_3 \leq b_3 \text{ and } a_1 \leq b_1$$

(iv) For any two LR symmetric trapezoidal fuzzy numbers \tilde{a} and \tilde{b} ; if $\tilde{a} \leq \tilde{b}$, then $\tilde{a} \leq (1 - \lambda) \tilde{a} + \lambda \tilde{b} \leq \tilde{b}$, for all $\lambda, 0 \leq \lambda \leq 1$.

(v) For any two LR symmetric trapezoidal fuzzy numbers \tilde{a} and \tilde{b} ; $\tilde{a} \cdot \tilde{b} = \tilde{b} \cdot \tilde{a}$ if $\tilde{a} \leq \tilde{b}$

4. FORMULATION OF SYMMETRIC TRAPEZOIDAL FUZZY NUMBERS

On analysis of fuzzy analogues of some important theorems of linear programming, any fuzzy linear programming problem can be converted to its **standard form** as:

$$\max \tilde{z} \approx \tilde{c} \tilde{x}$$

$$\text{Subject to } A \tilde{x} \approx \tilde{b} \text{ and } \tilde{x} \geq \tilde{0}, \quad (2)$$

where A is an $(m \times n)$ real matrix, $\tilde{b}, \tilde{c}, \tilde{x}$ are $(m \times 1), (1 \times n), (n \times 1)$ fuzzy matrices consisting of symmetric trapezoidal fuzzy numbers.

4.1. Theorem [7]

Let $\tilde{x}_B = B^{-1} \tilde{b}$ is a fuzzy basic feasible solution of (2). If for any column \mathbf{a}_j in A which is not in B , the condition $(\tilde{z}_j - \tilde{c}_j) < \tilde{0}$ hold and $y_{ij} > 0$ for some $i, i \in \{1, 2, 3, \dots, m\}$ then

it is possible to obtain a new fuzzy basic feasible solution by replacing one of the columns in B by \mathbf{a}_j .

Proof: Suppose that $\tilde{x}_B = (\tilde{x}_{B1}, \tilde{x}_{B2}, \tilde{x}_{B3}, \dots, \tilde{x}_{Bm})$ be a fuzzy basic feasible solution with k positive components such that $B \tilde{x}_B = \tilde{b}$ or $\tilde{x}_B = B^{-1} \tilde{b}$

where $\tilde{x}_{Bi} = [h_i, \alpha_i, \beta_i, h_i]$, $\alpha_i \leq \beta_i$, $h_i \geq 0$, for $i=1, 2, 3, \dots, m$

$$\text{and } \frac{\alpha_i + \beta_i}{2} > 0, \text{ for } i=1, 2, \dots, k$$

$$\frac{\alpha_i + \beta_i}{2} = 0, \text{ for } i = k+1, k+2, k+3, \dots, m$$

That is

$$\tilde{x}_{Bi} > \tilde{0}, \text{ for } i=1, 2, \dots, k$$

$$\tilde{x}_{Bi} = [h_i, -\beta_i, \beta_i, h_i], \text{ for } i=k+1, k+2, \dots, m.$$

Now equation $B \tilde{x}_B = \tilde{b}$ becomes

$$\sum_{i=1}^k \tilde{x}_{Bi} b_i + [h_{k+1}, -\beta_{k+1}, \beta_{k+1}, h_{k+1}] b_{k+1} + [h_{k+2}, -\beta_{k+2}, \beta_{k+2}, h_{k+2}] b_{k+2} + \dots + [h_m, -\beta_m, \beta_m, h_m] b_m \approx \tilde{b}$$

That is

$$\sum_{i=1}^k \tilde{x}_{Bi} b_i + \sum_{i=k+1}^m [h_i, -\beta_i, \beta_i, h_i] b_i \approx \tilde{b}$$

(3)

Then for any column \mathbf{a}_j of A which is not in B , we write

$$\mathbf{a}_j = \sum_{i=1}^m y_{ij} b_i = y_{1j} b_1 + y_{2j} b_2 + \dots + y_{rj} b_r + \dots + y_{mj} b_m = y_j B$$

We know that if the basis vector \mathbf{b}_r for which $y_{rj} = 0$ is replaced by \mathbf{a}_j of A , then the new set of vectors $(\mathbf{b}_1, \mathbf{b}_2, \dots, \mathbf{b}_{r-1}, \mathbf{a}_j, \mathbf{b}_{r+1}, \dots, \mathbf{b}_m)$ still form a basis.

Now for $y_{rj} = 0$ and $r \leq k$, we can write

$$b_r = \frac{a_j}{y_{rj}} - \sum_{\substack{i=1 \\ i \neq r}}^m \frac{y_{ij}}{y_{rj}} b_i = \frac{a_j}{y_{rj}} - \sum_{\substack{i=1 \\ i \neq r}}^k \frac{y_{ij}}{y_{rj}} b_i - \sum_{i=k+1}^m \frac{y_{ij}}{y_{rj}} b_i$$

$$\text{Equation (3) becomes } \sum_{\substack{i=1 \\ i \neq r}}^k \tilde{x}_{Bi} b_i + \tilde{x}_{Br} b_r + \sum_{i=k+1}^m [h_i, -\beta_i, \beta_i, h_i] b_i \approx \tilde{b}$$

$$\Rightarrow \sum_{\substack{i=1 \\ i \neq r}}^k \tilde{x}_{Bi} b_i + \frac{\tilde{x}_{Br}}{y_{rj}} a_j - \frac{\tilde{x}_{Br}}{y_{rj}} \sum_{\substack{i=1 \\ i \neq r}}^k y_{ij} b_i - \frac{\tilde{x}_{Br}}{y_{rj}} \sum_{i=k+1}^m y_{ij} b_i + \sum_{i=k+1}^m [h_i, -\beta_i, \beta_i, h_i] b_i \approx \tilde{b}$$

$$\Rightarrow \sum_{\substack{i=1 \\ i \neq r}}^k \left(\tilde{x}_{Bi} - \frac{\tilde{x}_{Br}}{y_{rj}} y_{ij} \right) b_i + \frac{\tilde{x}_{Br}}{y_{rj}} a_j + \sum_{i=k+1}^m \left([h_i, -\beta_i, \beta_i, h_i] - \frac{\tilde{x}_{Br}}{y_{rj}} y_{ij} \right) b_i \approx \tilde{b}$$

Since $\tilde{x}_{Bi} = [h_i, -\beta_i, \beta_i, h_i]$ for $i=k+1, k+2, \dots, m$, we have

$$\sum_{\substack{i=1 \\ i \neq r}}^k \left(\tilde{x}_{Bi} - \frac{\tilde{x}_{Br}}{y_{rj}} y_{ij} \right) b_i + \frac{\tilde{x}_{Br}}{y_{rj}} a_j + \sum_{i=k+1}^m \left(\tilde{x}_{Bi} - \frac{\tilde{x}_{Br}}{y_{rj}} y_{ij} \right) b_i \approx \tilde{b}$$

$$\Rightarrow \sum_{\substack{i=1 \\ i \neq r}}^m \left(\tilde{x}_{Bi} - \frac{\tilde{x}_{Br}}{y_{rj}} y_{ij} \right) b_i + \frac{\tilde{x}_{Br}}{y_{rj}} a_j \approx \tilde{b} \Rightarrow \sum_{\substack{i=1 \\ i \neq r}}^m \hat{\tilde{x}}_{Bi} b_i + \hat{\tilde{x}}_{Br} a_j \approx \tilde{b}$$

Where

$$\hat{\tilde{x}}_{Bi} = \left(\tilde{x}_{Bi} - \frac{\tilde{x}_{Br}}{y_{rj}} y_{ij} \right), i \neq r \text{ and } \hat{\tilde{x}}_{Br} = \frac{\tilde{x}_{Br}}{y_{rj}} \quad (4)$$

Which gives a new fuzzy basic solution to $A \tilde{x} \approx \tilde{b}$

We shall show that this new fuzzy basic solution is also feasible. This requires that

$$\left(\tilde{x}_{Bi} - \frac{\tilde{x}_{Br}}{y_{rj}} y_{ij} \right) \geq \tilde{0}, i \neq r \text{ and } \frac{\tilde{x}_{Br}}{y_{rj}} \geq \tilde{0} \quad (5)$$

&(6)

$$y_{rj} > 0 \text{ such that } \frac{\tilde{x}_{Br}}{y_{rj}} \approx \min_i \left\{ \frac{\tilde{x}_{Bi}}{y_{ij}} : y_{ij} > 0 \right\}. \text{ Then } \frac{\tilde{x}_{Br}}{y_{rj}} \leq \frac{\tilde{x}_{Bi}}{y_{ij}}$$

$$\Rightarrow \left[\frac{h_r}{y_{rj}}, \frac{\alpha_r}{y_{rj}}, \frac{\beta_r}{y_{rj}}, \frac{h_r}{y_{rj}} \right] \leq \left[\frac{h_i}{y_{ij}}, \frac{\alpha_i}{y_{ij}}, \frac{\beta_i}{y_{ij}}, \frac{h_i}{y_{ij}} \right] \Rightarrow \left[\frac{h_r}{y_{rj}} + \frac{h_i}{y_{ij}}, \frac{\alpha_r}{y_{rj}} + \frac{\alpha_i}{y_{ij}}, \frac{\beta_r}{y_{rj}} + \frac{\beta_i}{y_{ij}}, \frac{h_r}{y_{rj}} + \frac{h_i}{y_{ij}} \right] \geq \tilde{0}$$

$$\Rightarrow \left\{ \frac{\left(\frac{\alpha_i}{y_{ij}} - \frac{\beta_r}{y_{rj}} \right) + \left(\frac{\beta_i}{y_{ij}} - \frac{\alpha_r}{y_{rj}} \right)}{2} \right\} \geq 0 \Rightarrow \left(\frac{\alpha_i + \beta_i}{y_{ij}} \right) - \left(\frac{\alpha_r + \beta_r}{y_{rj}} \right) \geq 0 \Rightarrow \left(\frac{\tilde{x}_{Bi}}{y_{ij}} - \frac{\tilde{x}_{Br}}{y_{rj}} \right) \geq \tilde{0}$$

Hence the new fuzzy basic solution is a fuzzy basic feasible solution.

After the replacement of basis vectors, the new basis matrix is $\hat{B} = (\hat{b}_1, \hat{b}_2, \dots, \hat{b}_m)$, where $\hat{b}_i = b_i$ for $i \neq r$ and $\hat{b}_r = a_j$. The new fuzzy basic feasible solution is $\hat{\tilde{x}}_B$, where

$$\hat{\tilde{x}}_{Bi} = \left(\tilde{x}_{Bi} - \frac{\tilde{x}_{Br}}{y_{rj}} y_{ij} \right), i \neq r \text{ and } \hat{\tilde{x}}_{Br} = \frac{\tilde{x}_{Br}}{y_{rj}} \text{ are the basic variables.}$$

4.2. Theorem [7]

If $\tilde{x}_B = B^{-1} \tilde{b}$ is a fuzzy basic feasible solution of (2) with $\tilde{z}_0 \approx \tilde{c}_B \tilde{x}_B$ as the fuzzy value of the objective function and if $\hat{\tilde{x}}_B$ is another fuzzy basic feasible solution with $\hat{\tilde{z}} \approx \hat{\tilde{c}}_B \hat{\tilde{x}}_B$

obtained by admitting a non-basic column vector \mathbf{a}_j in the basis for which $(\tilde{z}_j - \tilde{c}_j) < \tilde{0}$ and $y_{ij} > 0$ for some $i, i \in \{1, 2, 3, \dots, m\}$, then $\hat{\tilde{z}} \geq \tilde{z}_0$.

Proof: Let \tilde{x}_B be a fuzzy basic feasible solution and $\tilde{z}_0 \approx \tilde{c}_B \tilde{x}_B$. Let \mathbf{a}_j be the column vector introduced in the basis for which $(\tilde{z}_j - \tilde{c}_j) < \tilde{0}$. Let \mathbf{b}_r be the column vector removed from the basis and $\hat{\tilde{x}}_B$ be a new fuzzy basic feasible solution, then

$$\hat{\tilde{x}}_{Bi} = \left(\tilde{x}_{Bi} - \frac{\tilde{x}_{Br}}{y_{rj}} y_{ij} \right), i \neq r \text{ and } \hat{\tilde{x}}_{Br} = \frac{\tilde{x}_{Br}}{y_{rj}}$$

since $\hat{\tilde{c}}_{Bi} = \tilde{c}_{Bi}, i \neq r$ and $\hat{\tilde{c}}_{Br} = \tilde{c}_j$, the new fuzzy value of the objective function is

$$\begin{aligned} \hat{\tilde{z}} &\approx \hat{\tilde{c}}_B \hat{\tilde{x}}_B \approx \sum_{i=1}^m \hat{\tilde{c}}_{Bi} \hat{\tilde{x}}_{Bi} \approx \sum_{i=1, i \neq r}^m \hat{\tilde{c}}_{Bi} \hat{\tilde{x}}_{Bi} + \hat{\tilde{c}}_{Br} \hat{\tilde{x}}_{Br} \\ &\approx \sum_{i=1, i \neq r}^m \tilde{c}_{Bi} \left(\tilde{x}_{Bi} - \frac{\tilde{x}_{Br}}{y_{rj}} y_{ij} \right) + \tilde{c}_j \frac{\tilde{x}_{Br}}{y_{rj}} \\ &\approx \sum_{i=1, i \neq r}^m \tilde{c}_{Bi} \left(\tilde{x}_{Bi} - \frac{\tilde{x}_{Br}}{y_{rj}} y_{ij} \right) + \tilde{c}_{Br} \left(\tilde{x}_{Br} - \frac{\tilde{x}_{Br}}{y_{rj}} y_{rj} \right) + \tilde{c}_j \frac{\tilde{x}_{Br}}{y_{rj}} \\ &\approx \sum_{i=1}^m \tilde{c}_{Bi} \left(\tilde{x}_{Bi} - \frac{\tilde{x}_{Br}}{y_{rj}} y_{ij} \right) + \tilde{c}_j \frac{\tilde{x}_{Br}}{y_{rj}} \\ (7) \quad &\approx \sum_{i=1}^m \tilde{c}_{Bi} \tilde{x}_{Bi} - \frac{\tilde{x}_{Br}}{y_{rj}} \sum_{i=1}^m \tilde{c}_{Bi} y_{ij} + \tilde{c}_j \frac{\tilde{x}_{Br}}{y_{rj}} \\ &\approx \tilde{z}_0 - \frac{\tilde{x}_{Br}}{y_{rj}} \tilde{z}_j + \tilde{c}_j \frac{\tilde{x}_{Br}}{y_{rj}} \\ &\approx \tilde{z}_0 - \frac{\tilde{x}_{Br}}{y_{rj}} (\tilde{z}_j - \tilde{c}_j) \end{aligned}$$

Since $y_{rj} > 0$, $(\tilde{z}_j - \tilde{c}_j) < \tilde{0}$ and $\frac{\tilde{x}_{Br}}{y_{rj}} \geq \tilde{0}$, let $\frac{\tilde{x}_{Br}}{y_{rj}} = \left[\frac{h_r}{y_{rj}}, \frac{\alpha_r}{y_{rj}}, \frac{\beta_r}{y_{rj}}, \frac{h_r}{y_{rj}} \right] \geq \tilde{0}, \alpha_r \leq \beta_r$ and

$$(\tilde{z}_j - \tilde{c}_j) = [h_j, \alpha_j, \beta_j, h_j] < \tilde{0}, \alpha_j \leq \beta_j$$

$$\begin{aligned} \frac{\tilde{x}_{Br}}{y_{rj}} (\tilde{z}_j - \tilde{c}_j) &\approx \left[\frac{h_r}{y_{rj}}, \frac{\alpha_r}{y_{rj}}, \frac{\beta_r}{y_{rj}}, \frac{h_r}{y_{rj}} \right] [h_j, \alpha_j, \beta_j, h_j] \\ &\approx \left[\left(\frac{\alpha_r + \beta_r}{2y_{rj}} \right) \left(\frac{\alpha_j + \beta_j}{2} \right) - w, \left(\frac{\alpha_r + \beta_r}{2y_{rj}} \right) \left(\frac{\alpha_j + \beta_j}{2} \right) + w, \left| \frac{\beta_r h_j + \beta_j h_r}{y_{rj}} \right|, \left| \frac{\beta_r h_j + \beta_j h_r}{y_{rj}} \right| \right] \end{aligned}$$

Also

$$\left\{ \frac{\left(\frac{\alpha_r + \beta_r}{2y_{rj}} \right) \left(\frac{\alpha_j + \beta_j}{2} \right) - w + \left(\frac{\alpha_r + \beta_r}{2y_{rj}} \right) \left(\frac{\alpha_j + \beta_j}{2} \right) + w}{2} \right\} = \left(\frac{\alpha_r + \beta_r}{2y_{rj}} \right) \left(\frac{\alpha_j + \beta_j}{2} \right) \leq 0,$$

Since

$$\left(\frac{\alpha_r + \beta_r}{2y_{rj}} \right) \geq 0 \text{ and } \left(\frac{\alpha_j + \beta_j}{2} \right) < 0 \text{ So equation (7) becomes } \hat{z} \geq \tilde{z}_0. \text{ Hence the new fuzzy}$$

basic feasible solution gives the improved fuzzy value of the objective function.

5. NUMERICAL EXAMPLE

XYZ Corporation is mobile Phone manufacturers. They produce three models. A,B and C where it is packed and distributed as per the market requirement .The details of packing and time consumed are tabulated. Model A yields a profit of Rs.8; Model B yields a profit of Rs.6; and Model C a profit of Rs.14.

MODEL	Packing Material (Kgs)	Packing Time(hours)
A	2	2
B	1	6
C	3	4
Total amount of resource available each week		120 240

The CEO of the company must decide the optimal number of each model of mobile phone to be manufactured with the available resources.

Solution:

From the above problem Packing Material which is close to 120 is modeled as [110, 130, 2, 2]and the Packing Time which is close to 240 is modeled as [220,260,3,3]

Similarly the other parameters are also modeled as symmetric trapezoidal fuzzy numbers taking into account the nature of the problem and other requirements.

Step:1: The given problem is formulated using fuzzy linear programming problem as

$$\max \tilde{z} \approx [110,130,2,2]\tilde{x}_1 + [220,260,3,3]\tilde{x}_2$$

$$\text{subject to } 2\tilde{x}_1 + 2\tilde{x}_2 \leq [7,9,2,2]$$

$$\tilde{x}_1 + 6\tilde{x}_2 \leq [5,7,3,3]$$

$$3\tilde{x}_1 + 4\tilde{x}_2 \leq [13,15,2,2]$$

$$\text{and } \tilde{x}_1 \geq \tilde{0}, \tilde{x}_2 \geq 0$$

Step:2: Add slack or surplus variable to make the inequality constraints to equality constraints.

$$\max \tilde{z} \approx [110,130,2,2]\tilde{x}_1 + [220,260,3,3]\tilde{x}_2 + \tilde{0}\tilde{S}_1 + \tilde{0}\tilde{S}_2 + \tilde{0}\tilde{S}_3$$

subject to $2\tilde{x}_1 + 2\tilde{x}_2 + \tilde{S}_1 \leq [7,9,2,2]$

$\tilde{x}_1 + 6\tilde{x}_2 + \tilde{S}_2 \leq [5,7,3,3]$

$3\tilde{x}_1 + 4\tilde{x}_2 + \tilde{S}_3 \leq [13,15,2,2]$

and $\tilde{x}_1 \geq \tilde{0}$, $\tilde{x}_2 \geq \tilde{0}$, $\tilde{S}_1 \geq \tilde{0}$, $\tilde{S}_2 \geq \tilde{0}$, $\tilde{S}_3 \geq \tilde{0}$ where \tilde{S}_1 , \tilde{S}_2 and \tilde{S}_3 are the slack fuzzy variables.

Step:3: Separate the coefficient, constants and variables into matrix form

That is $\max \tilde{z} \approx \tilde{c}\tilde{x}$ subject to $A\tilde{x} \approx \tilde{b}$ and $\tilde{x} \geq \tilde{0}$, where

$$A = \begin{pmatrix} x_1 & x_2 & \tilde{S}_1 & \tilde{S}_2 & \tilde{S}_3 \\ 2 & 2 & 1 & 0 & 0 \\ 1 & 6 & 0 & 1 & 0 \\ 3 & 4 & 0 & 0 & 1 \end{pmatrix} \quad \tilde{b} = \begin{pmatrix} [7,9,2,2] \\ [5,7,3,3] \\ [13,15,2,2] \end{pmatrix} \quad \tilde{x} = (x_1, x_2, \tilde{S}_1, \tilde{S}_2, \tilde{S}_3) \text{ and}$$

$$\tilde{c} = ([110,130,2,2] \quad [220,260,3,3] \quad \tilde{0} \quad \tilde{0} \quad \tilde{0})$$

Step:4: The initial fuzzy basic feasible solution is given by $\tilde{x}_B = B^{-1}\tilde{b}$, where

$$B = \begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix} \quad \tilde{x} = \begin{pmatrix} \tilde{S}_1 \\ \tilde{S}_2 \\ \tilde{S}_3 \end{pmatrix} \quad \tilde{b} = \begin{pmatrix} [7,9,2,2] \\ [5,7,3,3] \\ [13,15,2,2] \end{pmatrix} \text{ and } \tilde{x}_1 = [0, 0, 0, 0], \tilde{x}_2 = [0, 0, 0, 0],$$

$\tilde{S}_1 = [7,9,2,2]$ $\tilde{S}_2 = [5,7,3,3]$ $\tilde{S}_3 = [13,15,2,2]$ and the fuzzy value of the objective function is $\tilde{z} \approx [0, 0, 0, 0]$. Now $(\tilde{z}_j - \tilde{c}_j) \approx [-260, -220, 3, 3] < \tilde{0}$.

Step:5: By theorem (4.1) and (4.2), we get $\tilde{x}_1 = [0, 0, 0, 0]$, $\tilde{x}_2 = [5/3, 7/3, 1, 1]$,

$$\tilde{S}_1 = [26/3, 34/3, 3, 3] \quad \tilde{S}_2 = [0, 0, 0, 0] \quad \tilde{S}_3 = [49/3, 59/3, 3, 3]$$

Step:6: Using Def(2.3) the fuzzy number is converted in to a crisp lpp as

$$\Rightarrow \max z = 64.3x_1 + 128.2x_2$$

subject to

$$2x_1 + 2x_2 < 4.8$$

$$x_1 + 6x_2 < 5.3$$

$$3x_1 + 4x_2 < 8.3$$

$$x_1, x_2 > 0$$

solving the above lpp we get

Step:7: The optimum solution is $x_1 = 2.9$, $x_2 = 0.44$ and $\max z = 196.40$

6. CONCLUSION

In this paper, we have dealt L-R symmetric trapezoidal fuzzy numbers. We have studied the arithmetic operation in L-R symmetric trapezoidal fuzzy numbers. Also, we have used magnitude of L-R symmetric trapezoidal fuzzy number, for comparing the fuzzy number

and obtained a crisp value of a corresponding trapezoidal fuzzy number. The decision maker can be involved in all the steps of the decision process which makes our work very useful to apply in lot of real-time problems where the information is uncertain, like weather forecasting, marketing, Project investment etc.

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AUTHOR'S PROFILE

1st. Dr. A. Sahaya Sudha is presently working as Assistant Professor in department of mathematics, Nirmala College for women-Coimbatore. She is having vast experience of more than 18 years in research & teaching. She has published more than 22 papers in various prestigious international journals with high impact factor. She has produced 10 M.Phil. . Research scholars with highly authentic & innovative research work. Her area of interest includes operation research.

2nd.M. Revathy is presently working as Assistant Professor in department of mathematics, Dr.N.G.P. Arts and Science College-Coimbatore. She is having teaching experience of 5 years. She has published 4 research papers in various refereed journals. Her area of specialization includes Fuzzy sets & operation research.

Automatic Caption Generation For Electronics Text

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1st	Veena Thakur	M.Tech. Student Department of Computer Engineering, RMD Sinhgad School of Engineering, Pune, Maharashtra, India
2nd	Kanchan Varpe	Assistant Professor Department of Computer Engineering, RMD Sinhgad School of Engineering, Pune, Maharashtra, India

Abstract

Today's era is of a technology. Technology-supported learning systems (TSLS) have proved to be helpful in many learning situations. The methodology of learning might be different but common need is of appropriate representation of the knowledge to be learned. The authoring of the Domain Module is cost and labour intensive which was minimized by the use of technology. The main objective of this paper is to automate the generation of a caption module. A proposed framework DOM-Sortze with modification enables the automatic generation of the Caption Module for technology supported learning system (TSLS) from electronic textbooks. It is a technology of natural language processing techniques, heuristic reasoning, and ontologies for the semiautomatic construction of the Domain Module.

1. INTRODUCTION

Learning is an unbeaten process which was running from decades by adapting changes time to time. The way of mid age learning is far different from ancient learning process. Similarly the current way of learning process is different from mid age learning methodology which was be running from last few decades. But, now a day it has been changing gradually as technology is emerging. The revolution of information and

communication technologies (ICTs) has affected education, providing means to enhance both the teaching and learning processes. Now a days, technology-supported learning systems (TSLs), such as intelligent tutoring systems (ITSs), adaptive hypermedia systems (AHSs), and, especially, learning management systems (LMSs) such as Moodle or Blackboard, are being widely used in many academic institutions and becoming essential for education. E-learning, distance educations are becoming common words in education field. Both this represents web based learning technology in which student gets engaged in a study either in online or offline mode.

An appropriate Domain Module, i.e., the pedagogical representation of the domain to be learned is the basic requirement of learning methodology. The Domain Module is considered the core of any TSLs as it represents the knowledge about a subject matter to be communicated to the learner. In e-learning, the Domain Module enables the students to learn by themselves. The building of domain model includes the selection of domain topics to be learned, define the pedagogical relationships among the topics that determine how to plan the learning sessions. Textbook authors will follow similar problems while writing their documents, which are structured to facilitate comprehension and learning. Choose a set of reference books that provide the main didactic resources (DRs)—definitions, examples, exercises—for the subject, is a common technique of teachers for scheduling their lectures. Artificial intelligence techniques provide the means for the automatic construction of the Domain Modules from electronic texts books which may significantly contribute to reduce the development cost of the Domain Modules.

This paper presents DOM-Sortze with modifications, a framework for the automatic generation of the Domain Module from electronic textbook such that eBook uploaded by user. DOM-Sortze aims to be domain independent, so no domain-specific knowledge is used except the uploaded eBook, topic provided by the system user and the knowledge gathered from it.

2. RELATED WORK

In [1] M.A, Hearst suggested a discovery pattern is required to provide applicability in wide range of text. It helps in avoiding need for preen coded knowledge .The discovery pattern can be achieved by using hyponyms relation. The metadata [2] is required to develop a learning system. The metadata is abstract data of learning objects. Automatic generated data [2] is used by J.R. Anderson to develop learning system. Also as automatic generation of metadata is required for digital library such that ‘e’ learning, user will provide great number of learning objects. As automatic generation of metadata is required, domain ontology also must be generated automatically [3] or semi-automatically. After generation of ontology it has been used in e-learning based education as domain module A. Zouaq and R. Nkambou, states that [3] lack of reusing learning objects causes increase in time complexity. A per [4] there was a need of reusing learning objects by retrieving will help in lighten the workloads of construction of new on line courses. Learning objects can be reused to support learning in different platforms or environments. A system that

automatically build learning objects from electronic texts using POS analysis, Natural language processing techniques, ontologies and heuristic reasoning is presented. Some work has been done in the past. ErauzOnt was able to gather definitions, examples and exercises for the topic of the object oriented programming subject [5]. It is a system that uses ontologies, natural language processing techniques, and heuristic reasoning to generate learning objects from textbooks.

3. PROPOSED SYSTEM AND DESIGN

3.1. System Design

The proposed system is a first solution given for automatic generation of the learning Domain Module from electronic text, e-books. DOM-Sortze with modifications is proposed to generate learning domains from electronic text. DOM-Sortze aims to be domain independent, so no domain-specific knowledge is used except than the processed electronic text and the knowledge gathered from it. There is no existing system available to generate a domain module from any kind of texts, either from e-books or data entered by user. The authoring of the Domain Module is cost and labor intensive. Hence automatic generation of domain module for appropriate representation of the knowledge to be learned is proposed.

The proposed system will process the e-books and generates a domain module. The learning domain module contains; (a) the points according to the subject and topics under process, (b) the tutorials for subject and topics under process.

These will be performed by processing e-books with NLP (Natural Language Processing) and POS (Part of Speech) tagging. Other than this, AI such that Artificial Intelligence is the key factor of project, as Artificial intelligence techniques provide the means for the automatic construction of the domain modules from electronic textbooks which may significantly contribute to reduce the development cost of the domain modules.

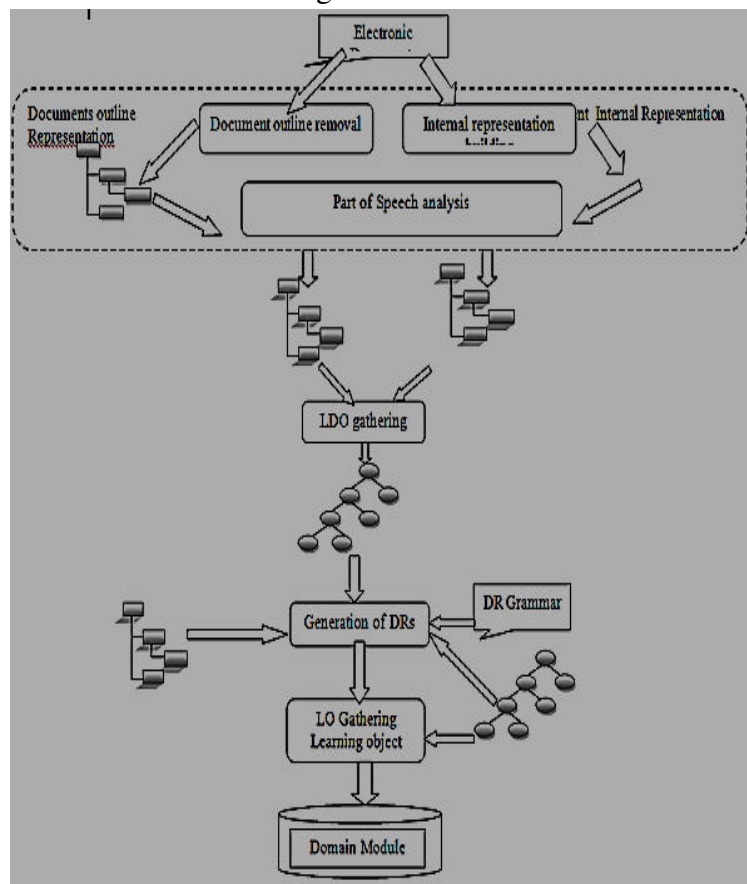


Figure 1: Architecture Diagram

As shown in architecture diagram, DOM-Sortze entails four main applications – the Pre-processor and LDO Builder – that carry out the tasks for building the Domain Module. The first carry out the textbook processing task and the latter facilitates the intervention of the Caption Module authors, either instructional designers or teachers, to supervise the results. The preview files might be helpful for the users to determine whether or not the LO fits their requests. Pre-processor and LDO builder are two main modules of proposed system.

3.2 Implementation Methodology

User will upload an e-book to website. System will analysis the e-book and presented result. Then user has to enter the index page of the e-book. Upon accepting all information from user, application will start pre-processing on e-book. The document outline from index was formed, which is basically represents the structure of e-book in which it will be organized. User has to choose any topic title from presented index and then as per internal structure, the e-book get process part by part. The each part gets divided into paragraphs and further into statements. For analysis of each paragraph, separate statements are considered for POS tagging. POS tagging analysis will help in finding the topic and what was said in statement regarding that topic. Same process gets repeated pages under consideration. Now, using this analysis, result containing LO's and LDO's will be presented to user. As every user / instructor thinks differently and also the need of points/notes and tutorials are different as per targeted students, it will be required that, instructor will change/edit the information presented. Hence the option to edit the presented information was provided.

3.3 Equations

The Document Internal Representation (DIR) from extracting the hierarchical structure of an electronic text such that document is represented by following equation;

$$DIR = \sum_{i=0}^n \{EXTR[I(ET)] + FORM[CONT(ET)]\}$$

Where ET is an Electronic Text

By applying POS analysis on DIR and electronic text document, set of LDO formed. The same is represented by following equation;

$$S\{LDO\} = POS[DIR] + POS[CONT(ETB)]$$

The new topic was formed by implementing equation;

$$NT = [S\{LDO\} + CONT(ETB)] \&\& [NLP_PATTERN] - (1)$$

And NLP pattern is as follows;

$$[NLP_PATTERN] = [((A|N) + (((A|N) * (NP) ? (A|N) *)N]$$

(A is an adjective, N is a noun, and P is a preposition)

Pedagogical relationships are formulated as;

$$PR = [\{STAT \&\&isA\} + \{STAT \&\&partOf\}] - (2)$$

From equations (1) and (2),

$$ENH(LDO) = NT + PR$$

A final learning objective was formed by applying equation given below;

$$LO = (ENH(LDO) \&\& DR)$$

Where, DR is formulated as;

$$DR = \{ (ENH(LDO) \&\& DIR) \parallel DR_Grammar \}$$

4. EXPERIMENTAL SETUP

The application developed is to process e-books in the form of PDF file to generate LO's. As all topics are not studied at a time, the proposed application gives an option to generate LO's from user's choice of pages in a file. The application will analysis the PDF file and displays information like, total size of file in Kb and total pages in a file. Then application will ask for from and to page numbers for further processing. Application will extract the contents from selected pages and present to user. Then user either goes for generation of learning modules or selects another from-to page numbers. The generated units are as shown in Fig. 2.

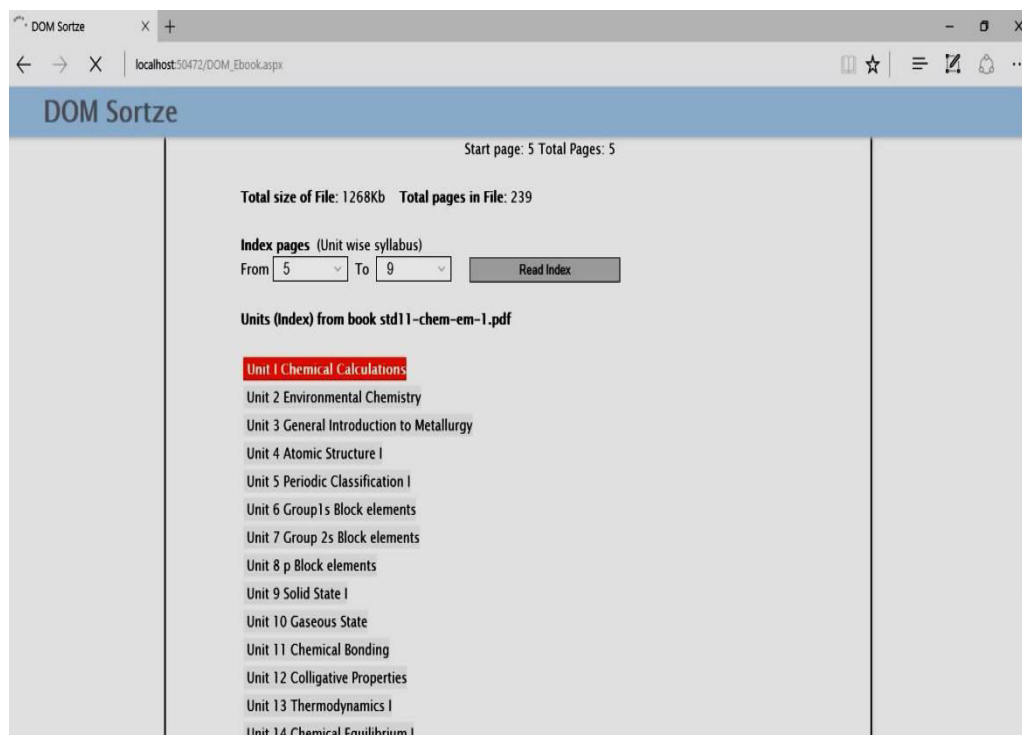


Figure 2: System output showing document outline

After pre-processing of e-book, the LOs are generated from user's choice of from-to pages. After generation, generated LOs are presented to user in a form of title list. On selecting the title, the detailed LOs will be displayed. Now, user has given a choice to select the LO titles and also an edit option for selected Los. The system will generate learning domain modules as per unit and corresponding LDO's selection by user of system. From, generated learning domain module, as per user choice, system will generate corresponding point note and presented to user for acceptance with or without medication or rejection. All the accepted learning modules are formed together in the sequence of selection for generating final learning module to be saved or take printout by user. The corresponding system output is as shown in Fig. 3.

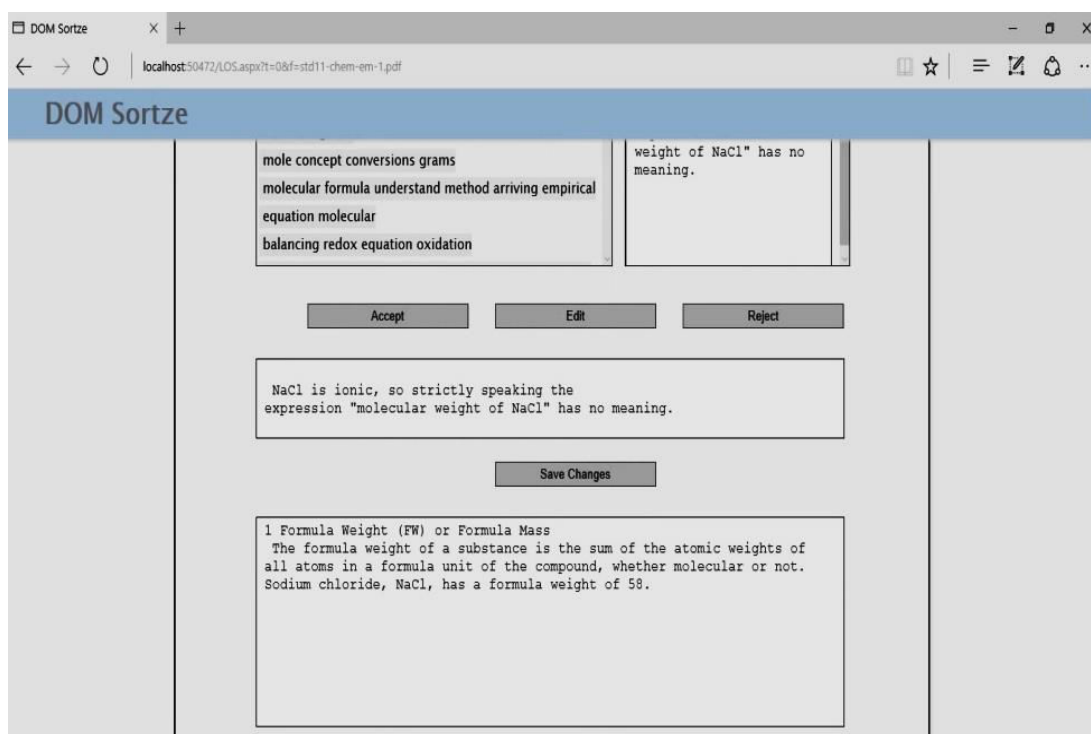


Figure 3: The system output showing learning module generated

5. CONCLUSION

In this paper, a framework for the automatic generation of the Learning Domain Module, DOM-Sortze module with modifications is discussed. This will generate learning Domain Module from electronic text such that eBook uploaded by user.

The generation of learning Domain Module using DOM-Sortze helps the e-learners to understand and study the topic neatly. Preparing the data for the process, gathering the LDO which is carried out by analyzing both the outline and the whole textbook, and the generation of LOs from the textbook, are the main parts of DOM-Sortze which is a system for the automatic generation of the Domain Module from electronic textbooks. DOM-Sortze was developed incrementally, forming the internal outline, coping with the acquisition of the LDO from the outline first, later the extraction of LOs from the documents and, finally, the whole Domain Module construction process. At each stage of the development of DOM-Sortze, an evaluation was carried out to verify the correct performance and to measure how much it can help the authors when developing new Domain Modules.

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7. AUTHOR'S BIOGRAPHIES



Ms. Veena M. Thakur received the BE degree in computer science from Kashibai Navale College of Engineering Pune in 2012, Now she is pursuing master degree in Computer Engineering from RMD Sinhgad School of Engineering Pune.



Kanchan Varpe is currently working as an Assistant Professor at the department of Computer Engineering of RMD Sinhgad School of Engineering, Pune. She is having around 8 Years of Experience in teaching. She has completed her Master's Degree in Computer Networks. She has published various research papers in prestigious international journals & attended international conferences. Her area of specialization includes computer networks & Technology-supported learning systems.

Analysis Of Flat Slab System With Ferro Cement Infill Subjected To Seismic Loading

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1 st	Poornima K G	M.Tech. Student Department of Civil Engineering, East west institute of technology, Bangalore
2 nd	Karthik N M	Assistant Professor Department of Civil Engineering, CMR institute of technology, Bangalore ,
3 rd	Vinod Shavare	Assistant Professor Department of Civil Engineering, East west institute of technology, Bangalore

Abstract

As we know all structural systems are enclosed with infill as they improve the performance of a structure during earthquakes in spite of this also it is considered as non-structural elements due to the negligence of the interaction of infill with the frame. Now days, flat slab system became widespread and gaining prominence as they possess lot of benefits against the conventional beam column connection in terms of architectural flexibility and economical in point of view. It enables fast construction, saves time and simple design but it is more flexible to lateral loads makes the structure susceptible during earthquake. In our work, we made an attempt to study the behaviour of Ferro cement panels in resisting the lateral loads as an infill. For this we proposed a G+ 30 storey flat slab structure with drop and 7 bays with spacing of 6m in both directions were considered. The flat slab frame with Ferro cement panels as an infill with and without perimeter beams by varying the infill percentage at various sections such as 12.25%infill in inner core, 20% infill in second core, 30%infill in outer core and 50%infill in double outer core in the total area of building were considered. After analysis the results of displacement, overturning moment and storey shear were tabulated and a comparative study was made with the bare frame. The structure was modelled using E-tabs for Bhuj earthquake time history analysis.

1. INTRODUCTION

A perceivable shaking of surface of the earth resulting from the sudden release of energy in the earth crust that creates seismic waves is an earthquake. Shaking and ground rupture are the main effects of earthquake results in severe damage to buildings and other rigid structures. The severity of indigenous effects is governed by earthquake magnitude, the distance from epicentre, and the geological and morphological conditions which diminish the wave propagation. Frequent occurrence of earthquake shows vulnerability of structures and its severe failure causes property damage and life disaster. To slacken potential losses, devastation, expected mutilation and loss in urban areas, there is an intended need for an earthquake resistant structure which keeps the structure safe from structural and architectural point of view.

All structural systems are confined with infill wall which serves as partitions or as claddings. These are considered as non-structural elements with an assumption that infill do not subsidize in resisting lateral loads. But past earthquakes high lightened the prominent contribution of infill in the description of their seismic behaviour.

1.1 Infill

Infill wall is the supportive wall that encloses the perimeter of the building. These are built throughout the building at desired location as it adds strength and rigidity to the structures. It is used to seal the gap between the vertical and horizontal resisting elements of building frames, assuming that infill will not resist any kind of loading such as gravity or lateral load but it act as a barrier to resist and to transform the load acting on a building.

Ferro cement infill

Ferro cement is a building material composed of a relatively thin layer of concrete covering wire mesh with reinforcing material. The thickness ranges from 25-50mm.

Advantages of Ferro cement infill

- It is a light weighted material than masonry
- It is the promising composite material for prefabrication and industrialization of the building industry.
- It acts as a good shielding material.
- Having less thickness and increases the ease of work.
- Economical.
- Increases the ductility as an infill in a structure.
- Can easily form to any shape and size.
- It can be used as pre cast and in situ.
- It is resilient to cracking action.

Infill walls contribute to a structure's lateral-force-resisting capacity and raise its energy dissipation capacity. In addition, infill wall improves the building's initial lateral stiffness and diminish its initial vibration period, inter storey drift which can result in better performance in earthquake shaking than a bare frame. It decreases the lateral deflection of building, displacement, bending moment in frames and enhances the axial force in columns and strength of frame. Finally reduces the probability of failure.

1.2 Interaction of infill with frame

During seismic loading, reinforced concrete frame will distort in a flexural mode whereas infill panel deformation is due to shear. This variance in the pattern of deformation causes the infill wall to resist the frame deformation through diagonal compression, which in turn results in forces applied along the contact surface between the frame and infill. For strong infill, the forces transferred to frames are high which introduce additional shear demands into the columns. The additional demands cause shear failure of the neighbouring columns.

1.3 Flat slab system

Flat slab system is a special structural form of reinforced concrete construction known as beamless slab, in which slab is directly propped by columns. The slab is thickened near the columns is called drops which is provided to attain sufficient strength in shear and to subside the negative reinforcement in the support regions. In the analysis and design, the flat slab is divided into column strip and middle strip because it has greater flexural deformation around the column due to lateral loading. Now days, flat slab system became widespread and gaining prominence as they possess lot of benefits against the conventional beam column connection in terms of architectural flexibility and economical in point of view. It enables fast construction, saves time, simple design.

1.4 Seismic Analysis

Seismic analysis can be performed either by static or by dynamic method of analysis. Dynamic analysis is performed to find lateral force in each floor over the height of the building and its redistribution in each floor as per IS.1893 (part 1):2002. We adopted time history method of analysis.

Time history method is a dynamic method of analysing the structure in which the structure is subjected to real ground motion records of the earthquake. Here the ground acceleration is directly applied at the base of the structure from earthquake records and in a short interval of time instantaneous stresses throughout the structure is estimated.

2. METHODOLOGY

A G+ 30 storey building with 7 bays in both directions with spacing of 6m is considered. The main objective is to study the behaviour of Ferro cement infill under seismic loading. Frame with Ferro cement infill by varying the percentage of infill at various sections such as 12.25%infill in inner core, 20% infill in second core, 30%infill in outer core and 50%infill in double outer core at various sections in total area of building were considered with a fixed support at the base of the building.

Table 2.1: Proposed model details

Type of structure	Flat slab with drop
Cases	1) with perimeter beams 2) without perimeter beams
No of storeys	G+30
Floor to floor height	3m

Grade of concrete	M40
Grade of steel	Fe500
Column dimension	0.7m x 0.7m 0.5m x 0.5m
Beam dimension	0.23m X 0.45m
Thickness of slab	0.15m
Thickness of drop	0.25m
Width of drop	3m
Type of infill	Ferro cement panel
Dead load	1 KN/m ²
Live load	3 KN/m ²

Table 2.2: Infill properties

Infill properties	Ferro cement
Mass per unit volume(Kg/m ³)	260.334
Modulus of elasticity(MPa)	26700000
Poisson's ratio	0.18
Shear modulus(MPa)	11313559.32
Thickness of wall(mm)	26

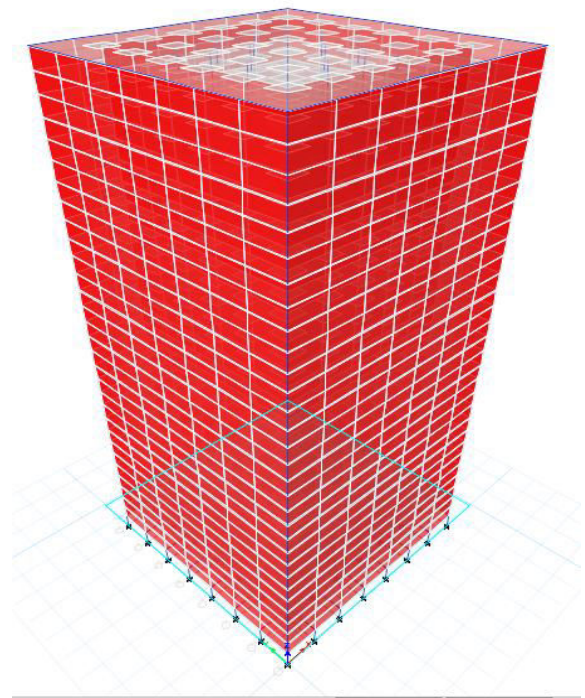
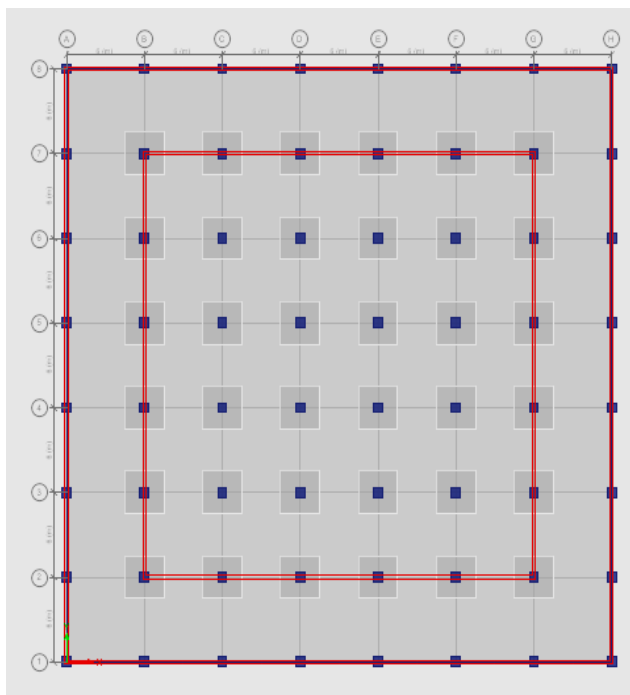


Figure 2.1: Plan and 3D view of building with 50% infill with perimeter beams in flat slab structure

3. RESULTS AND DISCUSSIONS

A linear time history method of analysis was performed as per IS.1893 (part 1):2002 to the models given below. Results are compared to each other in terms of storey displacement, overturning moment, storey shear and modes.

The following models are considered for the analysis.

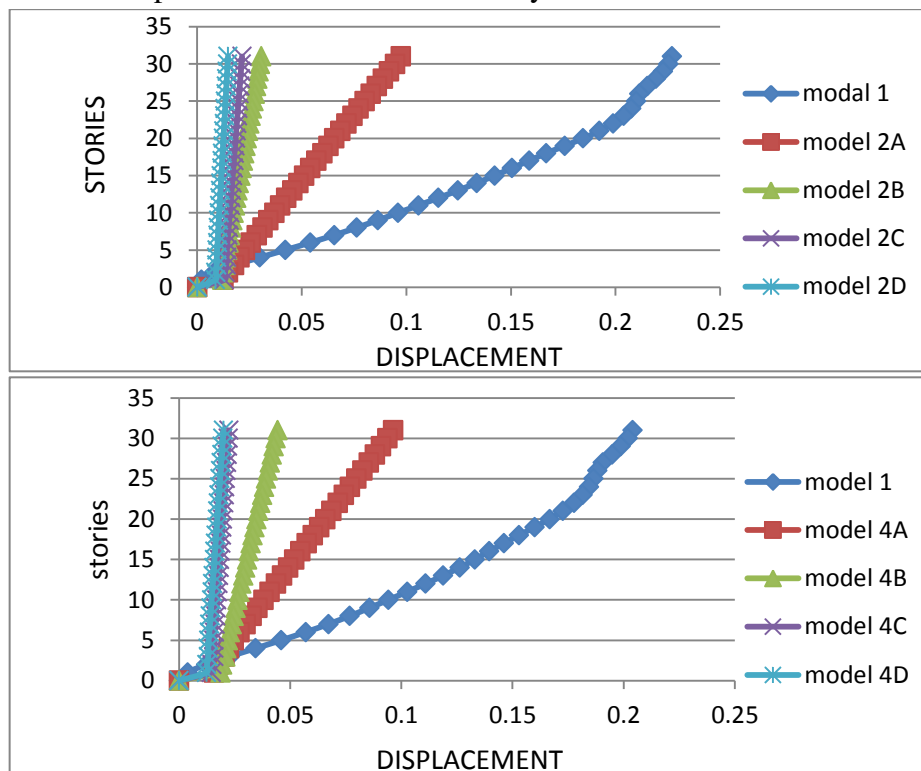
- **Model 1:** Bare frame
- Flat slab system with Ferro cement infill

Table 3: flat slab system without and with perimeter beams

Without perimeter beams	With perimeter beams
Model 2A: 12.25% infill in inner core	Model 4A: 12.25% infill in inner core.
Model 2B: 20% infill in second core	Model 4B: 20% infill in second core
Model 2C: 30% infill in outer core	Model 4C: 30% infill in outer core
Model 2D: 50% infill in double outer core	Model 4D: 30% infill in double outer core.

3.1 Storey Displacement

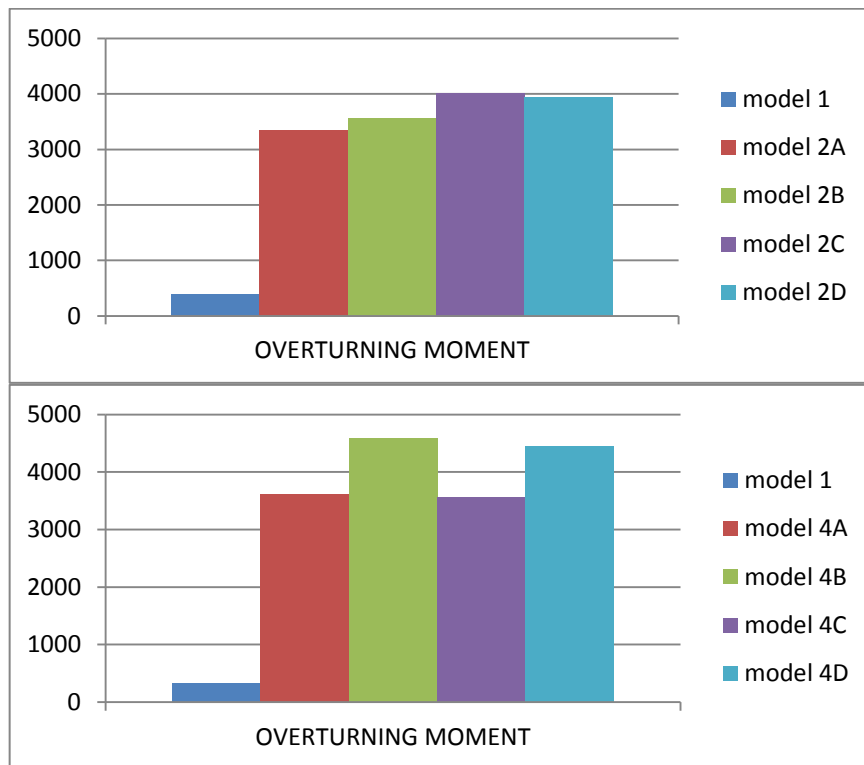
In time history method of analysis Bhuj earthquake record was considered. All the above models are analysed and the maximum storey displacements of all the models were shown in graphs. Here the Ferro cement with 50% infill in double outer core shows more resistance to displacement than bare frame and without perimeter beams shows more resistance than with perimeter beams in flat slab system.



Graph 3.1: Maximum Storey Displacement of Ferro cement infill in flat slab structure without and with perimeter beams

3.2 Overturning Moment

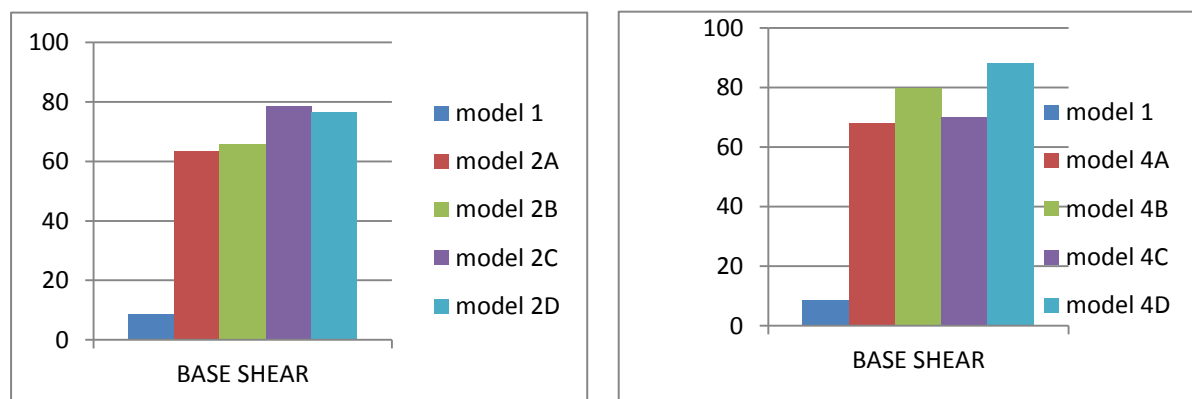
In time history method of analysis Bhuj earthquake record was considered. All the models are analyzed and the overturning moments of all the models were shown in graphs. Here Ferro cement infill with perimeter beams shows better results than without perimeter beams in flat slab system.



Graph 3.2: Overturning moment of Ferro cement infill in flat slab structure without and with perimeter beams

3.3 Base Shear

In time history method of analysis Bhuj earthquake record was considered. All the models are analysed and the base shear of all the models were shown in graphs. Here Ferro cement infill with perimeter beams shows better results than without perimeter beams in flat slab system and 50% infill had more base force than bare frame.



Graph 3.3: Base shear of Ferro cement infill in flat slab structure without and with perimeter beams

4. MODAL ANALYSIS

As per above results and discussions it can be stated as the infill percentage increases , the building has better performance for lateral loading where displacement is controlled considerably and also helps in increasing the base shear. Here we can observe that Ferro cement has a better performance as an infill material than bare frame. Ferro cement with perimeter beam with 50% infill is the most efficient to resist the lateral loading in a flat slab structure.

The following table shows the time period and frequency for the most effective model which is resistant to lateral loading.

Table 4: Natural period

	Bare Frame	Model 4D
Modes	Period(seconds)	Period(seconds)
1	5.507	0.504
2	5.507	0.504
3	4.646	0.312
4	1.88	0.123
5	1.88	0.123
6	1.609	0.038
7	1.08	0.038
8	1.08	0.038
9	0.928	0.036
10	0.749	0.036
11	0.749	0.036
12	0.649	0.036

5. CONCLUSION

From the above results and discussions we can conclude that

- Ferro cement is a very efficient infill material than bare frame.
- Flat slab structure with perimeter beams is very efficient than flat slab structure without perimeter beams in resisting seismic loads with controlled deflection.
- As percentage of infill increases lateral stability of building increases.
- According to the present study the 50% infill in double outer core shows the better performance than other percentages of infill considered.
- The Ferro cement infill with perimeter beams in flat slab structure with 50% infill is the most efficient.

So we concluded it should be the flat slab system with perimeter beams with Ferro cement 50% in filled in double outer core is the safer in resisting lateral loads.

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